Nova Guinea.

RÉSULTATS DES EXPÉDITIONS SCIENTIFIQUES À LA NOUVELLE GUINÉE

PUBLIÉS SOUS LA DIRECTION DE

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ORCHIDACEAE

BY

J. J. SMITH.

This fifth contribution to the knowledge of the Orchidaceae of Dutch New-Guinea includes the latest collections of the exploring detachment in North New-Guinea in 1914, viz. those of

A. C. TH. THOMSEN. Mamberamo.

L. A. C. M. DOORMAN. Mountain-ridge about 70 kilometer north of the Carstensz-summits. This collection was not numbered and afterwards numbered by me.

W. FEUILLETAU DE BRUYN. River-basin of the Mamberamo. Schouten Islands.

The greater part of the plants now treated of was collected during the 4th great New-Guinea expedition of 1920 by Dr. H. J. LAM. Also this collection proceeds from the river-course of the Mamberamo.

Finally there has been made mention of a number of species which since my latest contribution have come to flower in the Botanic Gardens of Buitenzorg or derived from various expeditions or gardens of amateurs, and besides of a few supplements and corrections of earlier publications.

Peristylus Bl.

Peristylus ciliolatus J. J. S. in Bull. Jard. Bot. Buit. 2e série, XIII (1914), 53; in Nova Guinea XII (1915), 178, t. LVI, 91.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3260 m., in a ravine on and near a wall of a rock. (H. J. LAM n. 1722, 24 October 1920). Same locality, 3200 m., humid spot on an open slope. (H. J. LAM n. 1683a, mixed with n. 1683, 21 October 1920). Same locality, 3260 m., open nearly flat country between rocks. (H. J. LAM n. 1744, 24 October 1920).

In n. 1722 the roots produce several adventitious plants which is probably also the case in n. 1744. In n. 1722 the transverse wall on the base of the lip bears in the middle a blunt tooth.

var. **apiculatus** J. J. S. n. var.

Differt a forma typica floribus paulo majoribus et calcari apice breviter acuminato-apiculato.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3200 m., humid spot on an open slope. (H. J. LAM n. 1683, 21 October 1920).

N. 1683 consist of 3 dried specimens viz. *P. ciliolatus* J. J. S., *P. ciliolatus* J. J. S. var. *apiculatus* J. J. S., and *Habenaria Lamii* J. J. S.

var. **lobatus** J. J. S. n. var.

Differt a forma typica petalis antice in lobulum distinctum productis et labelli lobis lateralibus melius evolutis.

Dutch New-Guinea. In the northern part, ridge to Doorman-top, open hill with shrubs, 3000 m., between stones. (H. J. LAM no. 1818, 30 October 1920).

Both varieties proposed here are represented only by a single specimen, so that further material is wanted to decide whether they may be kept upright.

Habenaria Wlld.

Habenaria Lamii J. J. S. n. sp.

Tab. XLI, 1.

Caulis brevis, pars adest 3.5 cm. longa, inferne vaginatus, superne c. 3-folius. Folia remota, parva, erecto-patentia, ovata, acuminata, undulata, dorso carinata, rigida, sicco c. 1.2—1.25 cm. longa, 0.6 cm. lata; vaginae tubulosae. Inflorescentia erecta, laxe 8-10-flora, pedunculo c. 12—14 cm. longo, vaginulis c. 4 tubulosis longe acuminatis superne in bracteas vergentibus donato, rachide angulata, glabra, c. 6 cm. longa. Bracteae erectae, ovario adpressae, valde concavae, rhombeae, longe acute acuminatae, 3-nerviae, c. 1.4 cm. longae, 0.5 cm. latae. Flores valde incurvi, parvuli, a sepalo dorsali usque ad apicem sepalorum lateralium c. 0.86 cm., a sepalo dorsali usque ad apicem calcaris c. 0.95 cm. metientia. Sepalum dorsale horizontale, cum petalis galeiforme, ovatum, obtusum, basi brevissime contractum, concavum, superne irregulariter crenulatum, c. 0.45 cm. longum, 0.275 cm. latum. Sepala lateralia reflexa, reversa, oblique semiovata, subfalcatula, obtusa, convexa cum sulco longitudinali, superne parce crenulata, 3-nervia, costa media dorso prominula, c. 0.575 cm. longa, 0.24 cm. lata. Petala sepalo dorsali non agglutinata, porrecta, parallela, oblique latissime ovata, obtusa, basi lata ad faucem calcaris inserta, obtusa, concava, 3-nervia, costa media dorso prominula, c. 0.44 cm. longa, 0.38 cm. lata. Labellum 3-partitum, calcaratum, lamina deflexa, ungue brevi lato gynostemio adnato, incrassatione transversa convexa ad basin laminae ante gynostemium, incrassatione conspicua convexa faucem calcaris cingente in ungue, laciniis lateralibus cum intermedia angulos angustos acutos facientibus, rectis, linearibus, obtusis, c. 0.325—0.34 cm. longis, 0.07—0.075 cm. latis, lacinia intermedia longiore latioreque, obtusa, convexa, c. 0.04 cm. longa, 0.14 cm. lata, usque ad basin labelli c. 0.675 cm. longa; calcar reversum, ovario subparallelum decurvum, subteres, dorso applanatum, superne antice oblique clavato-ampliatum, obtusum, fauce ampliatum, c. 0.875 cm. longum. Gynostemium breve, fere ad medium bifidum, dorso convexum, c. 0.18 cm. longum, auriculis anticis a latere compressis obtusis verruculosis. Anthera biloba, thecis brevibus, inferne tantum dehiscentibus, canalibus brevibus. Pollinia 2, brevia, pyriformia, caudicula glandulae lanceolatae affixa. Rostelli lobus intermedius latus, obtusus. Stigmata brevissima, libera, obtusa. Ovarium erectum, alte 6-sulcatum, tortum, in rostrum incurvum satis conspicuum productum, basi brevissime pedicellato-contractum, glabrum, totum c. 1.1 cm. longum.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3260 m., in open nearly flat rocky grounds. (H. J. LAM n. 1743 (type), 24 October 1920; n. 1683b, 21 October 1920, mixed with n. 1683).

I do not know a near ally of this plant in New-Guinea. The stigmata are very small and apparently wholly free.

"Leaves dark green, a little paler beneath; bracts green with a dark brown top; sepals and petals light green, suffused with dark brown outside, the two largest laciniae with a dark brown longitudinal line outside; spur greenish yellow; column light green; pollinia pale yellow; ovary light green". (H. J. LAM).

Description from a specimen preserved in alcohol and a dried one.

Corybas Salisb.

Corybas sexalatus J. J. S. n. sp.

Tab. XLI, 2.

Planta tota c. 2.7 cm. alta. Tuber subglobosum, longe pilosum, c. 0.375 cm. diam. Caulis subterraneus crassiusculus, teres, tuberculis teretibus longe pilosis tectus, c. 0.7 cm. longus, stolones similiter pilosos apice in tuber novellum terminantes emittens. Caulis epigaeus glaber, folii costa media marginibusque decurrentibus angulatus, c. 0.65 cm. longus, vagina tubulosa longe acuminata c. 0.4 cm. longa ad basin. Folium sessile, marginibus apiceque recurvis, cordatum, acutissime acuminatum, lobis basilaribus rotundatis, 3-nervium, costa media dorso carinata, cum lobis c. 0.75 cm. longum, 0.45 cm. latum. Bractea e basi dilatata concava subulato-acuminata, c. 0.25 cm. longa. Flos erectus, c. 0.9 cm. longus. Sepalum dorsale erectum, valde incurvum, labellum obtegens, valde concavum, 3-nervium, nervis exterioribus basi furcatis, dorso inferne 5-, superne irregulariter pluri- (ad c. 15-)costatum, costis irregulariter marginatis hic illic crenulatis, explanatum oblongo-subspathulatum, obtusum, apice irregulariter marginatum, c. 1.25 cm. longum, basi 0.34 cm., superne 0.47 cm. latum. Sepala lateralia minima, incurva, e basi oblique triangula subulato-acuminata, c. 0.15 cm. longa, bene 0.05 cm. lata. Petala parva, incurva, oblique subulata, acuta, canaliculata, 1-nervia, c. 0.3 cm. longa, 0.075 cm. lata. Labellum erectum, valde recurvum, marginibus postice contiguis tubulosum, basi bicalcaratum, apice 3-lobum, c. 0.76 cm., cum calcaribus 0.84 cm. longum, subexplanatum suborbiculare absque calcaribus c. 0.85 cm. longum et latum, lobis lateralibus margine postico cohaerentibus, valde falcato-triangulis, obtusis, concavis, dorso versus apicem verruculosis, lobo intermedio multo minore, valde recurvo, margine apicali incurvo lacinulatoque, basi canaliculato, transverse ovali, late rotundato, c. 0.35 cm. lato, calcaribus divergentibus, conicis, leviter compressis, anguste obtusis, bene 0.25 cm. longis. Gynostemium erectum, breve, vix curvulum, dorso convexum, callo conspicuo transverso aequilateraliter trapeziformi a dorso compresso ad basin, c. 0.2 cm. longum. Anthera erecta, obtusangule tectiformis, apice altius bilobula, lobulis triangulis. Pollinia parva. Stigma orbiculare, margine elevatum, concavum. Ovarium anguste 6-alatum, alis lacinulatis, c. 0.4 cm. longum.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3200 m., sheltered ravine with high conifers, terrestrial in moss-cushions. (H. J. LAM n. 1779, 29 October 1920: "stem and roots white, leaf light green, whole flower beautifully violet, the dorsal sepal streaked violet longitudinally").

A small species differing from all hitherto known by me in the winged ovary.

Description from a single specimen preserved in alcohol.

Corybas epiphyticus Schltr. in Fedde Rep. XIX (1923), 21. — *Corysanthes epiphytica* J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 1; in Nova Guinea XII (1913), 4, t. I, 2.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2800 m., light forest (*Casuarina* and *Dacrydium*), in moss on trunk. (H. J. LAM n. 1815, 30 October 1920; "roots white, leaf green, flower violet, all segments paler or white towards the tip, tip of lateral sepals and petals violet").

Nervilia Commers.

Nervilia punctata Schltr. in Engl. Bot. Jahrb. XLV (1911), 402. — *Pogonia punctata* Bl. Mus. Bot. Lugd. Bat. I, 32; Fl. Jav. Orch. 127, t. 49, 54; Miq. Fl. Ind. Bat. III, 716; Rchb. f. Xenia Orch. II, 87, t. 126, IV; J. J. S. in Fl. Buitenz. VI, Orch. 55; Atl. Fig. XXXIV.

var. **papuana** J. J. S. n. var.

Tab. XLII, 3.

Folium petiolatum, cordato-reniforme, c. 7-angulatum cum apice triangulo, nervis 5 supra sulcatis subtus prominentibus, viride, supra nitidulum, subtus opacum, c. 3.3 cm., cum lobis basilaribus 4.4 cm. longum, 4.5 cm. latum, petiolo angulato, supra sulcato, c. 4 cm. longo. Inflorescentia erecta, uniflora, pedunculo c. 4.5 cm. longo, vaginis magnis tubulosis acutis purpureo-punctatis c. 2.5—3 cm. longis omnino obtecto. Bractea erecta, lanceolata, acuta, concava, colore sepalorum, c. 0.95 cm. longa. Flos nutans, mediocris, c. 1.6 cm. longus, sepalis petalisque patentibus pallide olivaceis minute purpureo-maculatis et striatis. Sepalum dorsale lanceolatum, acutum, concavum, c. 1.95 cm. longum, 0.4 cm. latum. Sepala lateralia oblique lineari-lanceolata, acuta, concava, c. 1.9 cm. longa, 0.325—0.35 cm. lata. Petala oblique lanceolata, basi subunguiculato-angustata, acuta, concava, c. 1.8 cm. longa, 0.325 cm. lata. Labellum gynostemium amplectens et multo superans, 3-lobum, intus puberulo-papillosum et fascia longitudinali villosula inferne longitudinaliter unisulcata, subtus sulco longitudinali profundo, expansum c. 1.75 cm. longum, ad lobos laterales 0.775 cm. latum; lobi laterales erecti, porrecti, trianguli, obtusi vel denticulati, minute ciliolati, albi, vix purpureo-suffusi, c. 0.25—0.3 cm. longi; lobus intermedius late subrhombeus, obtusus, basi satis angustus, repandulo-dentatus et crenatus, concavus, ciliolatus, albus, purpureo-maculatus, c. 0.95 cm. longus, 0.8 cm. latus. Gynostemium clavatum, apice curvatum, subtus infra stigma pubescens, inferne dilute viride, apice albidum, parce purpureo-maculatum, c. 0.7 cm. longum, auriculis rotundatis. Anthera magna, cucullata, subcubica, apice leviter retusa, alba, vix purpureo-maculata, c. 0.16 cm. lata. Ovarium oblongo-obconicum, 6-angulare, sordide viride et purpureum, c. 0.6 cm. longum; pedicellus brevis, tenuis, c. 0.15 cm. longus.

Dutch New-Guinea: In the southern part, upper Digoel. (B. BRANDERHORST, liv. pl. cult. in Hort. Bog sub. n. 169).

Nervilia punctata Schltr. has not yet been met with again on the spot where BLUME collected it, so that it remains somewhat dubious. I think that different species have been taken for it.

The plant collected by Dr. BRANDERHORST I have described provisorily as a variety of *N. punctata*.

Nervilia macrophylla Schltr. Orch. D. N. Guinea (1911), 42; Fig. Atl. (1923), t. XVIII, 57.

Tab. XLI, 4.

Dutch New-Guinea: In the northern part, lower Tami-river, 40 m., forest, swampy humus. (K. GJELLERUP n. 658, 3 September 1911).

The plant remained unnamed as no leaf was collected. My analyse of the flower tallies fairly well with SCHLECHTER's figure.

Cryptostylis R. Br.

Cryptostylis maculata J. J. S. n. sp. — *C. arachnites* Hassk. var. *maculata* J. J. S. in Nova Guinea VIII (1909), 10.

Tab. XLII, 5.

Rhizoma abbreviatum, radicibus crassis. Folia ovata, acute acuminata, costa media supra canaliculata subtus valde carinata, nervis pluribus curvatis, carnosula, c. 7.5—9 cm. longa, 4.4—5 cm. lata; petiolus antice alte sulcatus, carnosus, c. 5 cm. longus. Inflorescentia erecta, laxe pluriflora, pedunculo tereti, c. 27 cm. longo, vaginulis c. 3 adpressis acuminatis nervosis c. 2—2.5 cm. longis donato, rachide angulata, sulcata, c. 8 cm. longa. Bracteae adpressae, ovatae, tenuiter acuminatae, concavae, c. 0.85 cm. longae, 0.4 cm. latae. Flores c. 10, erecti, c. 3 cm. lati, 3.2 cm. longi. Sepalum dorsale deorsum spectans, paululum incurvum, marginibus involutis tubulosum, explanatum lineare, acutum, 3-nervium, c. 1.4 cm. longum, 0.225 cm. latum. Sepala lateralia divaricata, patentissima, intermedio similia, subobtusa, apiculata, c. 1.5 cm. longa, 0.24 cm. lata. Petala deflexa, sepalo intermedio subparallela, sepalis similia sed minora, acutissima, 1-nervia, basi nervis 2 brevissimis additis, c. 0.9 cm. longa, 0.14 cm. lata. Labellum erectum, antice visum subrhombeo-oblongum, convexum cum marginibus recurvis, basi cucullatum, explanatum e basi dilatata aequilateraliter trapeziformi in laminam ovato-triangulam acutam contractum, totum c. 1.8 cm. longum, basi 0.9 cm. latum, supra basin latam constrictum, parte angustata c. 1.15 cm. longa, 0.67 cm. lata. Gynostemium brevissimum, recurvum, cum ovario angulum subrectum faciens, clinandrii lobulis lateralibus rotundatis convexis verruculoso-crenulatis. Anthera cucullata, late ovata, connectivo longitudinaliter costato apice in rostrum conicum obtusangule recurvulum producto, c. 0.225 cm. longa. Rostellum late triangulum, satis abrupte bidentatum. Stigma prominens, suborbiculare, c. 0.2 cm. latum. Ovarium erectum, apice recurvulum, 6-sulcatum, c. 1.1—1.3 cm. longum.

Dutch New-Guinea: In the southern part, Resirug, 500 m., forest. (G. M. VERSTEEG n. 1659, 25 August 1907; "petiole and leaves dotted greenish white, sepals and petals green, lip purple with a few blackish purple dots towards the apex").

This plant is not a variety of *C. arachnites* Hassk. as I formerly thought.

Description from a single specimen preserved in alcohol.

Lecanorchis Bl.

Lecanorchis ciliolata J. J. S. n. sp.

Tab. XLIII, 6.

Inflorescentiae elatae, superne subdense multiflorae, pedunculo gracili, c. 26.5 cm. longo, inferne (caule) ramoso vaginis satis densis sessilibus fere amplexicaulibus adpressis late trian-

gularibus obtusis concavis firmis ad c. 0.5 cm. longis superne decrescentibus laxioribusque donato, rachide diu flores gignente tenui flexuosa angulata verruculosa satis multiflora 5 cm. superante, internodiis c. 0.3 cm. longis. Bracteae persistentes, quaquaversae, brevissimae, rachidem magnam partem amplectentes, sessiles, adpressae, brevissime et late triangulae, obtusae, c. 0.1 cm. longae. Flores c. 12, quaquaversi. Sepalum dorsale lanceolatum, inferne subspathulato-contractum, obtusum, valde concavum, 3-nervium, bene 1 cm. longum, 0.275 cm. latum. Sepala lateralia oblique lanceolata, basi subspathulato-contracta, obtusiuscula, obtuse apiculata, concava, costa media praesertim versus apicem dorso incrassata, c. 1.1 cm. longa, fere 0.3 cm. lata. Petala oblique spathulata, obtusa, concava, 3-nervia, c. 1.1 cm. longa, basi 0.14 cm., superne 0.36 cm. lata. Labellum 3-lobum, inferne longitudine c. 0.5 cm. gynostemio in formam tubi intus basi excepta pubescentis adnatum, marginibus gynostemio adnatis praesertim superne incrassatis pubescentibusque, costis 2 conspicuis obliquis dense pubescentibus ad basin lobi intermedii abrupte terminantibus postice evanescentibus, explanatum ambitu oblongum, 6-nervium, c. 1.2 cm., usque ad apicem loborum lateralium 0.65 cm. longum, ad lobos laterales 0.54 cm. latum; lobi laterales porrecti, paralleli, gynostemio manifeste breviores, rotundati, concavi; lobus intermedius multo major, e basi leviter contracta ovali-rhombeus, obtusissimus, lobulatus, praesertim superne serrulatus, margine excepto dense pilis muriciformibus reversis elongatis flexuosis tectus, pilis in basi lobi in fasciis 2 longitudinalibus dispositis, bene 0.6 cm. longus, basi c. 0.25 cm., medio 0.53 cm. latus. Gynostemium ultra medium labello adnatum, gracile, clavatum, paulum infra medium manifeste obtusangule recurvum, dorso convexum, subtus puberulum, marginibus in parte libera dilatatis antice in auriculam dentiformem triangulam obtusam papillosam juxta stigma in dentem triangulum obtusum papillosum abientibus, c. 0.75 cm. longum, clinandrio alte excavato margine postico lato truncato. Anthera cucullata, antice subplana bene semiorbicularis basi bilobula, ciliolata, c. 0.16 cm. lata. Ovarium sessile, 6-sulcatum, c. 1.4 cm. longum. Cupula irregulariter dentata, c. 0.1 cm. alta, 0.2 cm. diam. Capsula sessilis, trigona cum costula in lateribus, infra cupulam vix constricta, c. 1.7—1.9 cm. longa, in valvas 6 lineares basi apiceqne plus minusve cohaerentes dehiscens.

Dutch New-Guinea: In the northern part, bank of rivulet east of Doorman-river, 250 m., terrestrial. (H. J. LAM n. 1303, 23 September 1920; "stem blackish brown, sepals and petals dirty light greyish lilac, lip with whitish tip, column white with yellowish white tip, ovary dirty lilac, fruit black").

Near *L. triloba* J. J. S. and *L. papuana* Schltr. but the side-lobes of the lip are much shorter than the column, which is conspicuously bent backward in the upper half. Remarkable are also the strong and densely pubescent ridges on the lip, the large blunt serrulate midlobe, and the anther being semiorbicular in outline and ciliolate.

The nearest ally, however, seems to be *L. multiflora* J. J. S. from Java, which is a stronger plant, with the side-lobes not much shorter than the column, the midlobe comparatively shorter, and a nearly straight column.

Description from specimens preserved in alcohol with one open flower.

Stereosandra Bl.

Stereosandra javanica Bl. Mus. Bot. Lugd. Bat. II, 176, etc.

var. **papuana** J. J. S. n. var.

Rhizoma oblongum, paulum compressum, sectione transversa ovale, vaginis numerosis

adpressis imbricantibus triangulis acuminatis tectum, c. 2.7 cm. longum, 1.5 cm. and 1—1.3 cm. diam. Inflorescentia erecta, laxe pluriflora, pedunculo c. 23 cm. longo, vaginulis c. 6 tubulosis donato, rachide angulata, c. 7.75 cm. longa. Bracteae lanceolatae, acutae, marginibus involutis, 5-nerviae, ad c. 0.9 cm. longae, 0.3 cm. latae. Flores c. 10. Sepalum dorsale sublineare, apicem versus sensim angustatum, acutum, 3-nervium, costa media dorso incrassata, fere 0.8 cm. longum, bene 0.15 cm. latum. Sepala lateralia intermedio similia sed obliqua, c. 0.9 cm. longa, basi fere 0.2 cm. lata. Petala oblique lanceolata, apicem versus angustata, superne paululum contracta, acuta, 3-nervia, costa media dorso incrassata, c. 0.8 cm. longa, fere 0.2 cm. lata. Labellum undatum, canaliculatum, lanceolatum, obtusum, basi paululum contractum et callis 2 marginalibus donatum, in c. $^1/_3$ supra basin latissimum, 3-nervium, fere 1 cm. longum, 0.3 cm. latum. Gynostemium breve, oblongum, apice producto obtuso dorso convexo, totum c. 0.35 cm. longum, absque anthera 0.15 cm. longum. Anthera cucullata, elongata, conduplicata, supra visa sublinearis, a latere visa lineari-oblonga, obtusa, basi paululum dilatata rotundato-bilobula cum denticulo, c. 0.24 cm. longa. Capsula pendula, immatura crasse oblonga, obtuse trigona cum lateribus convexis, 6-sulcata, pedicello tenui, c. 0,225 cm. longo.

Dutch New-Guinea: In the northern part, near Prauwen-bivouac, 200 m., forest on hill, terrestrial. (H. J. LAM n. 1220, 15 September 1920: "stem white with numerous thin lilac dots, sepals and petals white with a violet central streak at top, column white, ovary white with pale lilac ribs darker when young, pedicel white, bracts white").

The material preserved in alcohol consists of two specimens, one in fruit and one with very young buds. Provisionally I have described it as a form of the Javanese species finding no differences except the lip which is a little narrower. When better material comes to hand it may be inevitable to give it specific rank.

The genus had not yet been recorded from New-Guinea.

Vrydagzynea Bl.

Vrydagzynea discolabris J. J. S. n. sp.

Tab. XLIII, 7.

Caulis e basi decumbente radicante adscendens, teres, c. 0.375 cm. diam., vaginas paucas et folia c. 3 gerens. Folia oblique ovata ad ovato-lanceolata, acuta, basi oblique rotundata ad cuneata, crispa, costa media supra sulcata subtus carinata, c. 3.1—5.75 cm. longa, 1.3—1.9 cm. lata; petiolus canaliculatus, cum vagina brevi tubulosa c. 0.6—1.6 cm. longus. Inflorescentia erecta, dense multiflora, cylindrica, glabra, pedunculo tereti, c. 3.5 cm. longo, vaginula 1 bracteiformi adpressa donato, rachide c. 3 cm. longa. Bracteae lineari-triangulae, acutae, concavae, 1-nerviae, ad c. 1.2 cm. longae, superiores minores. Flores quaquaversi, c. 0.3 cm. lati, 0.725 cm. longi. Sepalum dorsale oblongum, apice longius contractum et carnoso-incrassatum, obtusum, valde concavum, 1-nervium, c. 0.425 cm. longum, explanatum c. 0.175 cm. latum. Sepala lateralia patentia, divergentia, valde cucullato-concava, late oblique oblonga, parte superiore dorso valde carnoso-incrassata verruculosaque, obtusissima, basi antice in laciniam basi calcaris adpressam producta, 1-nervia, c. 0.3 cm., margine antico 0.4 cm. longa, subexplanata fere 0.2 cm. lata. Petala sepalo dorsali agglutinata et dimidio superiore marginibus proximis inter se conglutinata, sepalo dorsali breviora, oblique oblonga, falcatula,

dimidio inferiore inaequilatera marginibus posticis angustis, dimidio superiore postice abrupte lobato-dilatata conglutinataque, apice antice abrupte breviter contracta incrassataque, truncata, concava, 1-nervia, c. 0.35 cm. longa, 0.175 cm. lata. Labellum cum calcari c. 0.7 cm. longum, lamina cum calcari angulum obtusum faciente, 3-loba, basi contracta, 1-nervia, usque ad apicem ovarii c. 0.3 cm. longa, gynostemium superante; lobi laterales basilares, parvi, breves, erecti, gynostemio adpressi, obtuse trianguli, intus convexi, extus concavi; lobus intermedius suborbicularis, margine satis angusto incurvo-erecto concavus, apice breviter obtuse incurvo-cucullato-apiculatus, incrassatione conspicua longitudinali convexa in apice lobi humili medium versus incrassato postice bilobo cum cruribus in lobos laterales decurrente, excavatione longitudinali in pagina inferiore, inexplanatus c. 0.24 cm. latus; calcar deorsum spectans, ovario parallelum, rectum, paululum a dorso compressum, sectione transversa ovale, oblongo-ovatum, apicem versus sensim angustatum, obtusum, usque ad apicem ovarii c. 0.4 cm. longum, 0.2 cm. latum, glandulis 2 globosis stipitatis a medio calcaris liberis usque ad $^1/_4$ infra apicem calcaris. Gynostemium cum ovario angulum subrectum faciens, obtusangule incurvum, dorso convexum, parte inferiore subtus oblongo-lineari-incrassatum basin versus paulo angustatum marginibus elevatis canaliculatum, c. 0.24 cm. longum, clinandrio oblique truncato, alte excavato cum costa longitudinali conspicua in rostellum decurrente. Anthera cucullata, basi in clinandrium quadrans, curvata, cordata, acuta, membranacea, connectivo costato-incrassato et bene infra apicem abrupte rotundato-terminante, c. 0.18 cm. longa. Pollinia 2, clavata, fissa, sectilia, cum caudiculis elongatis et glandula parva triangula c. 0.2 cm. longa. Rostellum ligulatum. Stigmata 2, porrecta, parallela, oblonga, obtusa. Ovarium tortum, 6-sulcatum, sulcis bini approximatis, glabrum, c. 0.55 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo, bivouac near Edi-falls, 40 m., terrestrial in forest. (H. J. LAM n. 776, 9 August 1920; "bracts green, flowers white").

According to the description this seems to be allied to *V. neo-hibernica* Schltr. It differs, however, in the narrower bracts, somewhat larger flowers, very concave sepals, the sepals and petals being very much thickened towards the apex, the petals with the inner margin abruptly broadened in the upper half, the three-lobed lip with the spur somewhat compressed from the back and measuring only 0.4 cm. in length, and the cordate anther.

Description from a single plant preserved in alcohol.

Vrydagzynea Schumanniana Krzl. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 86; etc.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 125 m., forest along the river, basalt covered with moss. (W. FEUILLETAU DE BRUYN n. 108, 14 September 1914). As quoted, c. 400 m., forest on sandstone. (W. FEUILLETAU DE BRUYN n. 115, 9 September 1914). In the southern part, east of Kloofbivak, 30 m., forest. (A. PULLE n. 173, 18 October 1912).

Vrydagzynea elongata Bl. Fl. Jav. I (1858), 61, t. 28, f. 1; etc.

Dutch New-Guinea; In the northern part, Otken-river, 26 m., forest. (A. C. TH. THOMSEN n. 675, 6 April 1914). Meervlakte, Mamberamo near Prauwen-bivouac, 90 m., forest. (H. J. LAM nrs. 1116 and 1130, September 1920).

Cystorchis Bl.

Cystorchis Versteegii J. J. S. n. sp. — *C. variegata* Bl. var. *purpurea* J. J. S. (nec Ridl.) in Nova Guinea VIII (1909), 14.

Tab. XLIII, 8.

Caulis elongatus, decumbens, radicans, adscendens, foliatus, c. 35 cm. longus. Folia c. 11, oblique ovata, acuta, apiculata, 5-nervia, costa media subtus prominente, pallide marginata, c. 3.2—4.3 cm. longa, 1.6—2.1 cm. lata; petiolus canaliculatus, cum vagina tubulosa c. 1.5—1.7 cm. longus. Inflorescentia erecta, longe pedunculata, multiflora, pedunculo pubescenti, c. 20 cm. longo, nonnulis vaginulis basi tubulosis acuminatis acutis pubescentibus donato, rachide dense pubescenti, 4 cm. superante. Bracteae e basi ovato-triangula acuminatae, concavae, pubescentes, ad c. 0.9 cm. longae. Flores c. 0.825 cm. longi, sepalis petalisque parallelis, sepalis dorso ovarioque patentissime glanduloso-pilosis. Sepalum dorsale horizontale, oblongo-ovatum, leviter acuminatum, obtusum, concavum, 1-nervium, c. 0.575 cm. longum, 0.25 cm. latum. Sepala lateralia oblique oblonga, obtusa, apice margine incurvo cucullato-concava, margine antico basi in lobum rotundatum inflato-concavum vesiculas calcaris arcte amplectentem dilatata, concava, 2-nervia, c. 0.66 cm., tota 0.8 cm. longa, 0.25 cm. lata. Petala sepalo dorsali agglutinata, oblique lanceolata, leviter falcata, obtusa, concava, dimidio superiore fere praesertim lateribus sepalum dorsale versus spectantibus valde papillosa, 1-nervia, c. 0.55 cm. longa, 0.15 cm. lata. Labellum calcaratum, totum c. 0.75 cm., usque ad apicem ovarii 0.47 cm. longum, subtus longitudinaliter sulcatum, parte inferiore (hypochylio) orbiculari-ovata concava tenui marginibus gynostemio adpressa 3-nervia, mesochylio porrecto carnoso-incrassato marginibus incurvis canaliculato anguste oblongo dimidio superiore in pulvinam longitudinalem lateralem oblongam papillosam incrassato c. 0.25 longo 0.15 cm. lato, epichylio porrecto minuto valde concavo orbiculari-ovato constrictione a mesochylio separato c. 0.06 cm. longo; calcar ovario parallelum decurvum, oblongum, a latere compressum, apice rotundatum, basi utrinque in vesiculam conspicuam deflexam rotundatam lateraliter compressam intus glaudula ovali carnosa c. 0.175 cm. diam. basi sepali lateralis obtectam inflatum, totum c. 0.325 cm. longum. Gynostemium breve, crassum, c. 0.27 cm. longum, clinandrio conspicuo alte excavato. Anthera alte in clinandrium immersa, cucullata, a latere compressa, cordata, apice in rostrum late triangulum tenuiter membranaceum producta, connectivo in formam cristae altae incrassato. Rostellum elongatum, porrectum, latum, bidentatum. Stigma conspicuum, suborbiculare. Ovarium tortum, 6-sulcatum, c. 0.8 cm. longum.

Dutch New-Guinea: In the southern part, Resirug, 300—800 m. (G. M. VERSTEEG n. 1631A, 24 August 1907; n. 1726, 16 September 1907; "green, tips whitish, lip orange, bracts reddish").

The plant enumerated by me l. c. under the name of *C. variegata* Bl. var. *purpurea* Ridl. has proved to be a distinct species. It differs from *C. dentifera* Schltr. in the petals not being "semirhombeo-dilatata" and the lacking of the tooth-shaped side-lobes of the lip, and from *C. orphnophylla* Schltr. in the many-flowered spike, the lip not being broadened upwards and the broader spur.

Description from herbarium and flowers preserved in alcohol.

Cystorchis rostellata J. J. S. n. sp.

Tab. XLIV, 9.

Caulis decumbens, radicans, adscendens, parte erecta c. 4 cm. longa, c. 4-folia, foliis inferioribus fatiscentibus. Folia ovata, apice breviter triangulo-subacuminata, subacuta, basi rotundata, margine crispula, 5-nervia, subtus (sicco) pallide punctata, ad c. 2.7 cm. longa, 1.6 cm. lata; petiolus tenuis, canaliculatus, cum vagina dilatata basi tubulosa ad c. 0.8 cm. longus. Inflorescentia erecta, longe pedunculata, apice subdense pauciflora, pedunculo pubescenti, c. 12 cm. longo, vaginulis 2 bracteiformibus longe acuminatis pubescentibus adpressis ad c. 1 cm. longis donato, rachide pubescenti, c. 1.4 cm. longa. Bracteae ovato-lanceolatae, sensim subacuminato-angustatae, acutae, concavae, dorso et margine pubescentes, 1-nerviae, c. 0.55 cm. longae, 0.25 cm. latae. Flores c. 6, c. 0.73 cm. longi, sepalis dorso ovarioque parcius glanduloso-pilosis. Sepalum dorsale horizontale, oblongum, e basi subovali supra medium oblongo-contractum cum apiculo incurvulo brevi truncato, concavum, 1-nervium, c. 0.5 cm. longum, 0.2 cm. latum. Sepala lateralia oblique oblonga, apice margine incurvo leviter cucullata, obtusa, margine antico basi in lobum rotudatum valde concavum vesiculas calcaris arcte amplectentem dilatata, 2-nervia, c. 0.53 cm., tota 0.675 cm. longa, supra basin c. 0.25 cm., basi non bene explanata 0.275 cm. lata. Petala sepalo dorsali agglutinata, oblique lineari-oblonga, leviter obtusangule falcatula, obtusa, margine exteriore dimidio superiore grossius papilloso-ciliolata, margine interiore $^1/_3$ superiore papillosa, 1-nervia, c. 0.475 cm. longa, 0.14 cm. lata. Labellum calcaratum, totum fere 0.7 cm., usque ad apicem ovarii 0.5 cm. longum, leviter undatum, subtus longitudinaliter sulcatum, parte inferiore (hypochylio) oblonga marginibus erectis canaliculato-concava gynostemio adpressa explanata triangula, marginibus ante gynostemium incurvis contiguis utrinque in pulvinam longitudinalem oblongam papillosam conspicuam incrassatis mesochylium oblongum formantibus, epichylio porrecto minuto abbreviato-ovato-triangulo obtuso horizontali; calcar reversum, ovario parallelum, basi utrinque in vesiculam conspicuam deflexam compsessam glandula ovali instructam c. 0.18 cm. longam basi sepali lateralis obtectam inflatum, apice productum, nudum, a latere compressum, apice contractum, obtusum, fere 0.1 cm. longum. Gynostemium breve, crassum, basi contractum, usque ad apicem rostelli c. 0.33 cm. longum, clinandrio magno, alte excavato. Anthera alte in clinandrium immersa, alte cucullata, cordata, apice triangulo-producta, acuta, connectivo incrassato, bene 0.2 cm. longa, rostello brevior. Pollinia 2, cum caudiculis linearibus basi breviter obtusangule divergentibus clavata, apice bene incrassata, glandula hyalina, tota c. 0.2 cm. longa. Rostellum elongatum, porrectum. Stigma conspicuum, concavum, basi margine incrassatum bilobulatumque. Ovarium tortum, glanduloso-pilosum, 6-sulcatum, c. 0.575 cm. longum.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 1200 m., in forest on moss-grown sandstone. (W. FEUILLETAU DE BRUYN n. 91, 12 September 1914; "flowers yellowish red").

Differing from the Papuan species described by Dr. SCHLECHTER and from *C. Versteegii* J. J. S. a. o. in the elongated rostellum.

Description from herbarium only.

Eurycentrum Schltr.

Eurycéntrum atroviride J. J. S. n. sp.

Tab. XLIV, 10.

Caulis e basi decumbente radicante adscendens, parte erecta c. 3—7 cm. longa, 4—8-folia. Folia patentia, ovata ad oblongo-ovata, plerumque apice breviter triangulo-contracta, acuta vel obtusiuscula, apiculata, basi late rotundata vel subcuneata breviter in petiolum contracta, glabra, 7-nervia, laxissime reticulato-venosa, mediana maxima, c. 2.3—5 cm. longa, 1.35—2.7 cm. lata; petiolus cum vagina patente ampla basi oblique infundibuliformi c. 1—1.5 cm. longus. Inflorescentia erecta, laxe pluriflora, pedunculo inferne parce superne densius pubescenti c. 7—15 cm. longo, vaginulis c. 3—4 basi tubulosis acuminatis pubescentibus donato, rachide patentissime glanduloso-pilosa, c. 4.5—6 cm. longa. Bracteae adpressae, e basi triangula longe subulato-acuminatae, concavae, dorso longe pilosae, c. 0.85 cm. longae, 0.34 cm. latae. Flores vagi, erecti, c. 0.65 cm. longi et lati. Sepalum dorsale valde concavum, cum petalis galeiforme, apice recurvum, ovatum, triangulo-acuminatum, subacutum, inferne dorso sparse reverse glanduloso-pilosum, 1-nervium, subexplanatum c. 0.4 cm. longum, 0.24 cm. latum. Sepala lateralia divergentia, basi calcaris adpressa, oblique triangula, oblique concava, marginibus superne incurvis tubuloso-acuminata, inferne dorso parce reverse glanduloso-pilosa, apice dorso verruculosa, 1-nervia, c. 0.425 cm., margine antico 0.55 cm. longa, 0.23 cm. lata. Petala sepalo dorsali apicibus recurvis exceptis agglutinata, oblique anguste oblonga, dimidio inferiore inaequilatera, obtusa, irregulariter repandula, superne minute celluloso-ciliolata, 1-nervia, c. 0.4 cm. longa, 0.12 cm. lata. Labellum usque ad apicem ovarii c. 0.375 cm., cum calcari c. 0.675 cm. longum, basi apici ovarii valde obliquo et basi gynostemii adnatum, valde concavum, marginibus ante gynostemium incurvis breviterque contiguis puberulisque deinde explanatis et laminam transversam abbreviato-ovato-triangulam obtusam disco triangulo convexo marginibusque obtusangule incurvis concavam erosulam minute papillosam c. 0.1 cm. longam 0.17 cm. latam formantibus, calcari dependente cum lamina angulum obtusum faciente, oblique oblongo margine antico subrecto margine postico infra apicem curvo eo apice paulo angustato obtuso leviter a latere compresso utrinque infra apicem excavatione longitudinali instructo, antice leviter longitudinaliter sulcato magnam partem dorso excepto irregulariter carnoso-incrassato, infra apicem utrinque glandula sessili ovali basi obtusa apice in cornua 2 divergentia producta donato, 3-nervio, usque ad apicem ovarii c. 0.475 cm. longo, dorso sectum et arte explanatum totum c. 0.7 cm. longum, 0.5 cm. latum. Gynostemium breve, curvatum, superne valde dilatatum, c. 0.15 cm. longum, clinandrio alte excavato margine postico late truncato. Anthera cucullata, transversa, subreniformis, basi bilobula, apice late truncata, connectivo longitudinaliter convexo-incrassato, c. 0.15 cm. lata. Rostellum truncatum, medio breviter productum. Stigma valde prominens, conspicuum, transverse quadrangulum, margine bene recurvum deinde incurvulum. Ovarium tortum, 6-sulcatum, apice contractum et oblique productum, patentissime glanduloso-pilosum, c. 0.63 cm. longum.

Dutch New-Guinea: Mamberamo near Prauwen-bivouac, 90—100 m., stony hill forest. (H. J. LAM n. 941, 29 August 1920; "stem pale green, leaves upper surface blackish green, pale green beneath, sometimes suffused with lilac, dorsal sepal red, brown when young, lateral sepals white tinted reddish on the back, petals white, lip cream-coloured with a little red, column white, ovary

green tinted yellowish red, bracts brown"; n. 1162, 12 September 1920; "leaves upper surface velvety green, margin pale, somewhat lilac, veins somewhat darker, pale green and somewhat rosy beneath, bracts rosy, dorsal sepal brownish red, lateral sepals rosy, petals and lip white, ovary light green").

Differing from the species hitherto described a. o. in the colour of the leaves, the form of the frontlobe of the lip and the glands in the spur. The anterior side of the spur in *Eu. atroviride* J. J. S. is straight, whereas the back especially towards the top is curved; in *Eu. Smithianum* Schltr., on the contrary, the backside is straight.

Description from herbarium and flowers preserved in alcohol.

Macodes Lindl.

Macodes Sanderiana Rolfe in Kew Bull. 1896, 47; etc.

Dutch New-Guinea: In the northern part, Mamberamo near Doorman-river, 200 m., shaded bank. (H. J. LAM n. 1276, September 1920).

Zeuxine Lndl.

Zeuxine amboinensis J. J. S. in Ic. Bog. II (1904), 259; etc.

var. **argentea** J. J. S. — *Z. argentea* Schltr. Orch. D. N. Guinea (1911), 79; Fig. Atl. (1925), t. XXXII, n. 108. — *Haplochilus amboinense* J. J. S. var. *argentea* J. J. S. in Ic. Bog. II (1903), 20.

Dutch New-Guinea: In the northern part, Mamberamo near Pionier-bivouac, 10 m., forest. (H. J. LAM n. 589, 7 July 1920; "leaves of a greenish tin-colour, flowers green and white").

The material collected by Dr. LAM without doubt belongs to *Z. argentea* Schltr. I see, however, no necessity to separate this specifically from *Z. amboinensis* J. J. S.

The colour of the leaves not being noted I do not know whether the specimens enumerated in Nova Guinea VIII (1909), 16, belong to the var. *argentea* or not.

The differences between *Hetaeria* Bl. and *Zeuxine* Lndl. are not easy to point out. In my opinion the character of the not inverted flowers of *Hetaeria* is not quite reliable on account of its appearance in various degrees. I think that a better characteristic is to be found in the pollinarium, perhaps in connection with other peculiarities. The descriptions are, however, especially on this point, often rather defective.

Hetaeria Bl.

Hetaeria latipetala Schltr. Orch. D. N. Guinea (1911), 89; Fig. Atl. (1925), t. XXXVII, 125.

var. **longirostris** J. J. S. n. var. — *H. oblongifolia* Bl. var. *papuana* J. J. S. in Nova Guinea VIII (1909), 17, t. VI, 16.

Dutch New-Guinea: In the northern part, Mamberamo near Prauwen-bivouac, forest on hill, 60 m. (H. J. LAM n. 860, August 1920; "flowers dirty greenish white"). As quoted, 100 m. (H. J. LAM n. 942, August 1920; "sepals inside white somewhat reddish outside, spur (?) yellow, rest white; column darker yellow than spur"). As quoted, 180 m., forest between pieces of rock. (H. J. LAM n. 1077, September 1920; "sepals light yellowish rosy, petals white, lip light brown, column greenish white").

This resembles *H. latipetala* Schltr, in all respects, except the anther which is much longer.

Hetaeria falcatula J. J. S. in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 26; etc.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 1200 m., forest in moss. (W. FEUILLETAU DE BRUYN n. 88, 6 September 1914; "flowers light red").

Goodyera R. Br.

Goodyera papuana Ridl. in Journ. Both. XXIV (1886), 355; Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 94; Orch. D. N. Guinea (1911), 48; Fig. Atl. (1923), t. XX, n. 65. — *G. confundens* J. J. S. in Nova Guinea XII (1915), 192, t. LXIV, 105.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivaouc, 10 m., forest. (H. J. LAM n. 440, June 1920; "flowers reddish brown-green, lip yellow with a white border").

SCHLECHTER's figure of *G. papuana* Ridl. tallies very well with mine of *G. confundens* J. J. S., so that I think that the latter can not be maintained as a species.

Goodyera Gibbsiae J. J. S. in Bull. Jard. Bot. Buit., 3e sér. V (1922), 24. — *G. arfakensis* J. J. S. in Gibbs, Contr. Phyt. Fl. D. N. W. N. Guinea (1917), 108.

Hylophila Lndl.

Hylophila gracilis Schltr. Orch. D. N. Guinea (1911), 57; Fig. Atl. (1923), t. XXIV, n. 77.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 1000 m., in moss. (W. FEUILLETAU DE BRUYN n. 83, 3 September 1914; "flowers whitish green").

Coelogyne Lndl.

Coelogyne Beccarii Rchb.f. in Bot. Centralbl. XXVIII (1886), 345; etc.

Dutch New-Guinea: In the northern part, Mamberamo, 26 m., forest. (A. C. TH. THOMSEN n. 891, 24 September 1914; W. FEUILLETAU DE BRUYN n. 138, 6 October 1914). Near Doorman-river, 200 m., epiphytic. (H. J. LAM n. 1405, September 1920).

Pholidota Lndl.

Pholidota imbricata Lndl. in Hook. Fl. Exot. (1825), t. 138; etc.

var. **papuana** J. J. S. n. var.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 8, liv. pl. cult. in Hort. Bog. sub n. 43 and 51). In the southern part, Upper Digoel. (HEYERMAN, liv. pl. cult. in Hort. Bog. n. 7, XII B, IX, 62).

Since I have seen a large number of specimens of this plant, which is apparently very common in Dutch New-Guinea, I think it best to keep it apart as a variety. In general it is stronger than the forms of other regions and has a much longer and stronger peduncle.

Plocoglottis Bl.

Sect. Euplocoglottis.

Plocoglottis longicuspis J. J. S. n. sp.

Tab. XLV, 11.

Rhizoma breve, verticale, cylindricum, carnosum, initio vaginis mox decadentibus et fibras adpressas relinquentibus tectum, radicibus crassiusculis villosis. Pseudobulbi erecti, subteretes, paucinodes, fibris vaginarum instructi, c. 3 cm. longi, 1-folii. Folium erectum, lanceolatum, acute acuminatum, mucronatum, basi acuta in petiolum angustatum, nervis 5 supra sulcatis subtus carinatis, nervis pluribus supra prominulis intermixtis, firmiter papyraceum, c. 17.5 cm. longum, 5—5.3 cm. latum; petiolus angulato-canaliculatus, cum vagina brevi basi tubulosa c. 3.75—4.25 cm. longum. Inflorescentia e pseudobulbo, erecta, laxa, pedunculo tereti, puberulo, c. 15.5 cm. longo, vaginulis c. 5 superne in bracteas vergentibus donato, rachide puberulo, internodiis c. 0.8—1.2 cm. longis. Bracteae patentes, persistentes, oblongo-triangulae, acutae, concavae, dorso puberulae, ad c. 1 cm. longae. Flores mediocres. Sepalum dorsale lanceolatum, apicem versus angustatum, anguste obtusum, bene concavum, dorso sparse patentissime puberulum, intus ad basin parcissime puberulum, 5(—7)-nervium, carnosulum, c. 1.55 cm. longum, 0.45 cm. latum. Sepala lateralia apice recurvo sigmoidea, oblique oblonga, a medio fere angustata, anguste obtusa, longius tenuiter apiculata, basi margine antico in lacinulam angustam falcatam calcar amplectentem producta, valde concava, indumento sepali dorsalis, 7-nervia, carnosula, c. 1.45 cm., margine antico bene 1.5 cm. longa, 0.55 cm. lata. Petala oblique lanceolata, falcatula, apicem versus angustata, satis acuta, basi paululum contracta, 3-nervia, costa media intus extusque sulcata, carnosula, margine basin versus tenuia, 1.35 cm. longa, 0.37 cm. lata. Labellum gynostemium paulum superans, inexplanatum supra visum late rhombeum, c. 0.8 cm. longum, cuspide revoluta, marginibus omnino recurvis, valde convexum cum canicula inconspicua longitudinali obtusangula, subtus valde concavum, inferne lamellis 2 triangulis gynostemii parti inferiori elastice adnatum, calcari parvo reverso recurvulo lateraliter compresso obtuso in formam costae longitudinali subtus in laminae basin decurrente, explanatum cuspide calcarique exceptis ambitu sexangulatum, apicem versus paulo dilatatum, angulis obtusum, magnam partem carnosulum, marginibus inferne tenuibus erosulisque, marginibus anticis in utraque cuspidis parte valde obliquis, cuspide conspicua e basi triangula canaliculato-subulato-angustata satis acuta, 7-nervium, nervis 3 intermediis in cuspidem productis, totum c. 1.1 cm. longum, lamina 0.925 cm., parte libera 0.7 cm. longa, 0.675 cm. lata, cuspide 0.325 cm. longa, basi 0.2 cm. lata. Gynostemium crassum, leviter praesertim dorso lateraliter compressum, rectum, apice incurvum, marginibus medio obtusangulis, subtus concavum, infra stigma longitudinaliter canaliculatum, utrinque parcissime puberulum, dorso c. 0.5 cm. longum, clinandrio excavato, apice breviter producto incurvulo truncato. Anthera cucullata, subquinquangulari-ovata, anguste obtusa, basi leviter cordata, connectivo costato-incrassato, c. 0.18 cm. lata. Ovarium 6-sulcatum, puberulum, c. 1.5 cm. longum.

Dutch New-Guinea: In the northern part, Pionier-bivouac, 50 m., hilly country, terrestrial in forest. (H. J. LAM n. 2105, 9 January 1921; "leaves dark green, peduncle green, bracts brownish, sepals and petals dark red at the base, tip yellow, lip light yellow finely streaked red, column light yellow, ovary green").

The very conspicuous cusp of the lip calls to mind *P. sphingoides* J. J. S. The new species differs, however, in the narrower leaves, shorter and broader sepals and petals, the shape of the lip, column and anther. From *P. neo-hibernica* Schltr. it is distinct according to the very short description by the form of the lip, broader leaves and bracts, and monophyllous well developed pseudobulbs.

Description from a single specimen preserved in alcohol with a defect inflorescence bearing only one open flower and a bud.

Sect. Porphyrophyllos.

Plocoglottis Lowii Rchb.f. in Gard. Chr. 1865, 434; etc.

var. **papuana** J. J. S. in Nova Guinea XII (1915), 197.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 400 m., forest, sandstone with moss. (W. FEUILLETAU DE BRUYN n. 116, 14 September 1914; "leaf deep brownish green, flowers light yellow with an orange-coloured centre"). Mamberamo, near Pionier-bivouac, 50 m., hilly country, terrestrial in forest. (H. J. LAM n. 2106, 9 January 1921; "peduncle greenish violet, green upward, dorsal sepal light yellow, lateral sepals yellow and dirty red, petals pale yellow, lip yellow with an orange base, column pale yellow with brown").

Sect. Phyllocaulos.

Plocoglottis mamberamensis J. J. S. n. sp.

Tab. XXV, 12.

Caules erecti, elongati, multifolii, c. 80 cm. longi, parte inferiore c. 34 cm. longa vaginis tubulosis mox marcescentibus et fibras tantum relinquentibus tecti, internodiis ad c. 7 cm. longis. Folia c. 13, alternatim bifaria, lanceolata, sensim longe acuminata, basi sensim angustata acutaque, breviter petiolato-contracta, nervis 5 majoribus subtus prominentibus, sicco papyracea, mediana maxima, summa angustissima, ad c. 36 cm. longa, 5 cm. lata; vaginae elongatae, tubulosae, sicco prominenter nervosae. Inflorescentiae a basi caulium, erectae, elongatae, dense multiflorae, diu flores gignentes, pedunculo 68 cm. superante, vaginis c. 8 tubulosis donato, rachide sicco angulata, dense breviter patentissime pilosa. Bracteae semiovales, abrupte subulato-acuminatae, basi latae, valde concavae, margine convexae et leviter undulatae, extus et intus praesertim margine et apice breviter hirtellae, carnosulae, margine tenuiores, totae c. 0.575 cm, longae, 0.425 cm. latae, acumine fere 0.2 cm. longo. Flores mediocres, quaquaversi, carnosuli, sepalis dorso breviter patentissime crassiuscule puberulis. Sepalum dorsale oblongum, apice angustatum obtusum recurvulum, concavum, c. 1.23 cm. longum, 0.475 cm. latum. Sepala lateralia ad pedem gynostemii brevissimum decurrentia, oblique oblonga, obtusa, costa dorso versus apicem convexo-incrassata et in formam subulae lateraliter compressae producta, basi obliqua, concava, c. 1.45 cm. longa, fere 0.5 cm. lata. Petala incurva, apice recurvula, oblique lanceolata, subfalcatula, apice angustata, anguste obtusa, basi obliqua, dorso parcissime puberula, utrinque convexa, apice tantum concava, carnosula, margine tenuia, c. 1.3 cm. longa, 0.3 cm. lata. Labellum gynostemium superans, brevissime calcaratum, inexplanatum ambitu oblongo-quadrangulum, medio leviter constrictum, apice paulo dilatatum breviter trilobulum, basi membranis inflexis basi gynostemii adnatum et utrinque rotundatum, supra valde convexum cum incrassationibus 2 costiformibus canalicula obtusangula separatis, subtus praesertim parte mediana valde concavum, carnosulum, basi inter costas membranaceum, totum

c. 0.77 cm. longum, apice 0.56 cm., inferne 0.475 cm. latum, explanatum 0.87 cm. longum, apice 0.65 cm. latum, lobulis lateralibus brevibus obtusis apice suberosulis, lobulo intermedio reflexo, sinibus rotundatis a lobulis lateralibus separato, triangulo, acuto, convexo cum sulco longitudinali inconspicuo, c. 0.14 cm. longo, basi 0.15 cm. lato, calcari brevissimo, reverso, valde a latere compresso, obtuso, subtus in formam costae longitudinalis in labellum fere usque ad medium decurrente. Gynostemium cum ovario angulum obtusum faciens, basi labello adnatum, crassum, curvulum, a latere compressum, sectione transversa triangulum, dorso anguste convexum, subtus concavum cum canalicula longitudinali, parce breviter puberulum, dorso absque anthera c. 0.55 cm. longum, clinandrio excavato margine erosulo apice postice breviter bidentato. Rostellum porrectum, triangulum. Stigma suborbiculare. Ovarium pedicellatum alte 6-sulcatum, patentissime pubescens, c. 1.6 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo-river. (W. FEUILLETAU DE BRUYN n. 148, leg. AJOEB, 12 October 1914; "fl. yellow, dotted red").

This differs from *P. kaniensis* Schltr. according to the description in the broad bracts and smaller flowers, from *P. papuana* Schltr. in the broad bracts, the lip being dilated upward when not laid out and not "truncatissimum", the puberulous column, from *P. pseudo-moluccana* Schltr. in the broader leaves, broad bracts, the short apical lacinia of the lip, puberulous column, from *P. glaucescens* Schltr. in the broader leaves, much longer many-flowered inflorescence, broad bracts, differently shaped lip, puberulous column, from *P. torricellensis* Schltr. in the much broader leaves, dense spike, broad bracts, etc. Especially with *P. papuana* Schltr. it should be compared carefully.

Description from herbarium and flowers preserved in alcohol.

Piocoglottis sororia J. J. S. n. sp. — *P. moluccana* J. J. S. (nec Bl.) in Nova Guinea VIII (1909), 22.

Tab. XLVI, 13.

Caules erecti, satis tenues, c. 60—65 cm. longi, inferne vaginati, ceterum foliati, internodiis c. 4—6 cm. longis. Folia c. 10—11, alternatim bifaria, patentia, lanceolata, sensim longissime acuminata, acutissima, basi breviter petiolato-angustata, nervis 5 subtus prominentibus, c. 19—26 cm. longa, 1.6—2.9 cm. lata; vaginae longe tubulosae, internodia superantes, angulatae. Inflorescentiae e basi caulium, erectae, laxe multiflorae, pedunculo puberulo, c. 40 cm. longo, internodiis inferioribus sequentibus crassioribus et multo brevioribus, vaginulis tubulosis donato, rachide puberula, 17 cm. superante. Bracteae e basi triangula subulato-acuminatae, valde concavae, puberulae, c. 0.5—0.6 cm. longae. Flores qnaquaversi, mediocres. Sepalum dorsale lanceolatum, anguste subobtusum, concavum, marginibus praesertim superne incurvis, dorso puberulum, 5-nervium, c. 1.45 cm. longum, 0.45 cm. latum. Sepala lateralia reflexa, oblique lanceolata, marginibus superne incurvis longius acuminata, subulato-apiculata, dorso puberula, 5-nervia, c. 1.65 cm. longa, 0.46 cm. lata. Petala oblique lineari-lanceolata, apicem recurvum versus angustata, marginibus superne incurvis canaliculato-acuminata, basi inconspicue dilatata, dorso parce puberula, 3-nervia, c. 1.4 cm. longa, 0.3 cm. lata. Labellum brevissime calcaratum, inferne lamellis 2 triangulis gynostemio elastice adnatum, valde convexum, incrassationibus 2 longitudinalibus convexis canalicula sejunctis, explanatum quadrangulum, supra basin non constrictum, angulis basilaribus rotundatis, angulis anticis obtusis apice truncatum

cuspide recurva anguste triangula acuta imposita, totum c. 1.2 cm. longum, lamina c. 1.1 cm., parte libera 0.775 cm. longa et lata, cuspide 0.225 cm. longa. Gynostemium crassum, leviter sigmoideum, marginibus inferne obtusangule dilatatis, parce puberulum, parte labello adnata subtus longitudinaliter canaliculatum et dense papillosum, c. 0.6 cm. longum. Ovarium pedicellatum 6-sulcatum, puberulum, c. 1.75 cm. longum.

Dutch New-Guinea: In the southern part, Gelueksheuvel near the Noord-river, 150 m., terrestrial in forest. (G. M. VERSTEEG n. 1599, 11 August 1907; "sepals and petals yellow with red points and dots, lip and inferior part of column white, apical part of colum yellow separated from the white part by a red streak").

As I have already pointed out (in Nova Guinea XII (1915), 201) this is not *P. moluccana* Bl. Though in many respects it closely resembles *P. maculata* Schltr. I am not prepared to unite it with that species without having seen specimens. It is a much larger plant with longer 5-nerved leaves, a much longer many-flowered raceme, broader bracts, larger flowers with the petals slightly puberulous and the column proportionaly longer. VERSTEEG did not mention the maculation of the leaves. In connection with this it is to be noted that yellow spotted leaves are of frequent occurrence in the genus *Plocoglottis* but in my opinion should not be used as a specific character. I am inclined to admit that those spots point to some secondary influence. In *P. acuminata* Bl. the leaves are usually spotted but every now and then green leaves are to be found. In *P. javanica* Bl. on the other hand they are ordinarily green, but also spotted leaves may occur. It is well known that *Phajus flavus* Lndl., which belongs to the same group, shows both specimens with spotted and green leaves.

Plocoglottis tropidiifolia J. J. S. n. sp.

Tab. XLVI, 14.

Rhizoma ramosum, teres, innovationibus curvatis. Caules erecti, elongati, c. 49 cm. longi, dimidio inferiore vaginis tubulosis tecti, dimidio superiore foliati, internodiis inferioribus elongatis superioribus decrescentibus. Folia c. 12, alternatim bifaria, erecto-patentia, lanceolata, sensim longe acuminata, basi in petiolum canaliculatum contracta, nervis 5 primariis subtus prominentibus, papyracea, mediana maxima, cum petiolo c. 0.7 cm. longo c. 20 cm. longa, 3.7 cm. lata; vaginae internodia superantes, sese amplectentes, tubulosae, apice antice excisae basi petioli latiores plus minusve rotundatae et irregulariter marginatae, c. 5 cm. longae. Inflorescentiae e caulium nodis inferioribus, erectae, laxe multiflorae, diu flores gignentes, pedunculo inferne parce superne dense puberulo, c. 43 cm. longo, vaginulis c. 5 tubulosis donato, rachide puberulo, 30 cm. superante, internodiis c. 2.9—0.7 cm. longis. Bracteae persistentes, patentissimae, triangulo-lanceolatae, puberulae, ad c. 1 cm. longae, superiores minores. Flores mediocres. Sepalum dorsale in flore novello erectum, cum ovario et sepalis lateralibus angulum subrectum cum gynostemio angulum acutum faciens, lanceolatum, longe acuminatum, apice canaliculatum, dorso puberulum, intus parce breviter puberulum, 5-nervium, c. 1.35 cm. longum, fere 0.4 cm. latum. Sepala lateralia reflexa, parallela, oblique oblonga, longe subulato-acuminata, apice canaliculato excepto convexa, indumento sepali dorsalis, c. 1.4—1.45 cm. longa, 0.475—0.5 cm. lata. Petala leviter inaequalia, erecta, oblique sublinearia, apicem versus angustata, sensim longe acute acuminata, apice canaliculata, unum infra medium leviter constrictum, basi angusta, utrinque praesertim ad basin pilis brevibus rarissimis inspersa, 3-nervia, c. 1.3—1.4 cm.

longa, 1.2 cm. lata. Labellum porrectum, cum gynostemio angulum acutum faciens, gynostemium superans, brevissime calcaratum, valde convexum, inexplanatum marginibus lateralibus apiceque valde recurvis antice bilobulum, incrassationibus 2 longitudinalibus convexis sulco separatis, cum calcari c. 0.85 cm. longum, lamellis 2 triangulis gynostemio breviter adnatum, explanatum ambitu quadrangulum, e basi utrinque rotundata sensim paululum dilatatum, apice magis dilatato trilobulum, lobulis lateralibus angulo exteriore obtusis antice leviter rotundatis erosulisque, sinibus rotundatis a lobulo intermedio cuspidiformi anguste triangulo acute acuminato bene longiore separatis, superne pilis brevissimis rarissimis inspersum, totum bene 1.1 cm. longum, lamina c. 0.95 cm. longa, inferne 0.5 cm., superne 0.775 cm. lata, acumine 0.24 cm. longo; calcar parvum, reversum, falcato-recurvulum, obtusum, c. 0.15 cm. longum, in formam costae longitudinalis infra medium evanescentis in paginam inferiorem labelli decurrens. Gynostemium cum ovario angulum obtusum faciens, basi labello adnatum, crassum, lateraliter compressum, dorso vix curvulum, basi angustatum, dorso parce puberulum, subtus concavum, parte labello adnata costis 2 conspicuis longitudinalibus convexis postice attenuatis V-formiter approximatis instructum, apice subtrilobulum erosulumque, lobulo intermedio paululum producto, c. 0.55 cm. longum, clinandrio alte excavato. Anthera cucullata, ovato-triangula, medio leviter contracta, obtusa, connectivo umbonato antice in costulam longitudinalem angustato, c. 0.16 cm. lata. Rostellum productum, crassum, semiovale. Ovarium pedicellatum puberulum, c. 1.4 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo near Prauwen-bivouac, 60—90 m. (H. J. LAM n. 779 (type), 15 August 1920; "leaves spotted yellow, sepals and petals yellow dotted red at the base, lip pale yellow, column white at the base than with a transverse red bar and a yellow top, ovary yellow or greenish yellow, bracts green"; n. 1024, 3 September 1920; n. 1044, 5 September 1920, "leaves light green"; n. 1166, without flowers, 12 September 1920, "leaves light green").

I am not quite sure that all the numbers cited above belong really together, the material being not very good. In the shape of the flowers, in so far as present, they agree very well except that the sepals in n. 1024 are less acuminate. In the vegetative organs they are, however, considerably smaller than in the type specimen, and the leaves only 3-nerved. It is possible that only weak specimens were collected. Better material is wanted to make out if we have to do indeed with the same species.

On the label of n. 779 the collector notes that the leaves are mottled yellow, whereas they are described as light green in the other specimens. See also the annotation under *P. soraria* J. J. S.

The species is nearly allied to *P. Janowskyi* J. J. S. but the stems are much shorter, the sepals more acuminate, the lip less widened at the apex and with a longer acumen, the column longer, the anther narrowed to the apex, the ovary longer.

Description from herbarium only.

Spathoglottis Bl.

Spathoglottis elobulata J. J. S. n. sp.

Tab. XLVI, 15.

Pseudobulbi approximati, parvi, ovoidei, annulati, c. 2.5 cm. longi, 1.6 cm. diam., c. 3-folii, basi nonnullis vaginis superne accrescentibus valde angulatis viridibus purpureo-tinctis

superioribus laminam parvam viridem caducam gerentibus donati. Folia erecta, petiolata, vaginis et petiolis partim sese amplectentia, vix lanceolato-linearia, sensim longissime et anguste acuminata, valde plicata, plicis c. 8 supra 7 subtus prominentibus, satis firmiter coriacea, opace viridia, c. 60—73 cm. longa, 2.5—2.1 cm. lata; petiolus canaliculatus, costatus, c. 10—14 cm. longus; vagina tubulosa, c. 9—10 cm. longa. Inflorescentiae c. 2, erectae, pedunculo subtereti, puberulo, inferne sordide purpureo, superne dilute viridi, c. 40—59 cm. longo, 0.325- 0.45 cm. diam., vaginis c. 4—6 summa plerumque excepta tubulosis ad c. 3.5—5.3 cm. longis donato, rachide elongata, leviter nutante, puberula, valde multiflora, 20 cm. et plus longa. Bracteae reflexae, elliptico-ovatae, subacuminatae, subacutae, valde concavae, minute puberulae, purpureae, apice medio virides, explanatae ad c. 1.8 cm. longae, 1 cm. latae. Flores parvuli, purpurei, c. 3—3.5 cm. lati vel paulo majores. Sepalum dorsale oblongo-ellipticum, obtusum, concavum, intus parce puberulum, dorso puberulum, c. 1.95—2.1 cm. longum, 0.825—0.9 cm. latum. Sepala lateralia oblique oblongo-elliptica, apice angustata, anguste obtusa, obtusangule concava, dorso obtuse carinata, indumento sepali dorsalis, dimidio inferiore intus pallida et minute purpureo-punctata, c. 1.75—1.9 cm. longa, 0.825—0.9 cm. lata. Petala oblique elliptica ad ovato-elliptica, obtusa, basi leviter contracta, intus basi puberula, ceterum pilis brevibus rarissimis inspersa, dorso parce puberula, c. 1.8—1.9 cm. longa, 0.95—1 cm. lata. Labellum 3-lobum, subtus longitudinaliter sulcatum, explanatum c. 1.55—1.6 cm. longum, ad lobos laterales c. 1.65—1.7 cm. latum; lobi laterales incurvi, explanati patentissimi, leviter reversi, oblique anguste oblongi, apice postice leviter dilatati, oblique obtusi, atropurpurei, extus albi, praesertim apicem versus purpureo-punctati, c. 0.75—0.8 cm. longi, apice c. 0.3 cm., medio 0.24—0.25 cm. lati, disco inter lobos quadrato, albo, striis 2 longitudinalibus parallelis purpureo-punctatis notato, supra subtusque et subtus etiam in ungue lobi intermedii parce piloso; lobus intermedius spathulatus, medio plus minusve geniculato-recurvulus, lobulis basilaribus nullis, callo bilobo postice concavo antice convexo apice parcius longe piloso dilute flavo sordide fusco-purpureo-punctato c. 0.3 cm. lato in basi, c. 1.15 cm. longus, ungue lineari, convexo, parte inferiore (fere usque ad medium lobi intermedii) flavescenti longitudinaliter purpureo-fusco-punctato, c. 0.125 cm. lato, lamina e basi late cuneata subobreniformi, apice recurvo late sed levissime retusa, in utraque parte lineae mediae convexa cum apice unguis atropurpurea, fere 0.7 cm. lata. Gynostemium gracile, leviter clavatum, arcuatum, dorso convexum, subtus concavum, purpureum, basi pallidius, c. 1.25—1.35 cm. longum, clinandrio excavato, irregulariter marginato. Anthera cucullata, late ovata, obtusa, albida, c. 0.2 cm. lata. Pollinia 8, oblique obverse triangulo-clavata, flava, c. 0.2 cm. longa. Rostellum triangulum, acutum. Stigma transversum. Ovarium 6-sulcatum, puberulum, sordide atropurpureum, c. 0.95—1.2 cm. longum; pedicellus tenuior et paulo pallidior, puberulus, c. 1.6 cm. longus.

Dutch New-Guinea: Temena-river. (Exp. R. WICHMANN, 1903, DJIBDJA, liv. pl. cult. in Hort. Bog. sub n. 37h).

Differing from *S. plicata* Bl. in the narrower leaves, smaller flowers with narrower sepals and petals, the lip with the side lobes less dilated at the apex and the midlobe without basal lobules, and the column thinner and less arched.

In the plants cultivated in Buitenzorg the inflorescences were often branched.

The species should be compared with *S. papuana* Bail.

Description from living specimens.

Spathoglottis microchilina Krzl. in Engl. Jahrb. XVII, 482. — *S. Wrayi* Hook.f. Fl. Br. Ind. V (1890), 813; Ic. Pl. t. 2086. — *S. aurea* J. J. S. (nec Lndl.) in Fl. Buit. VI, Orch. (1905), 218; Fig. Atl. fig. CLXI; in Gibbs, Fl. Arfak Mts. (1917), 109.

Dutch New-Guinea: In the northern part, Arfak Mts., Angi-lake, 1900 m., on the bank between shrubs, on granite gravel. (K. GJELLERUP n. 1044, April 1912).

The material was insufficient for determination. After having examined, however, the material the late Miss L. S. GIBBS collected on the same spot, I am pretty sure that we have to do with *S. microchilina* Krzl., which, I think, is not identical with *S. aurea* Lndl. with which I united it formerly.

Phajus Lour.

Sect. Pesomeria.

Phajus amboinensis Bl. Mus. Bot. Lugd. Bat. II (1858), 180; etc.

Dutch New-Guinea: In the northern part, Mamberamo, 25—40 m., forest. (A. C. TH. THOMSEN n. 880, 22 September 1914).

Calanthe R. Br.

Sect. Caulodes.

Calanthe Versteegii J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 55; in Nova Guinea XIII (1915), 206, t. LXVII, 112. — *Giullianettia disticha* Ridl. in Transact. Linn. Soc. 2nd ser. Bot. IX (1916), 201, pl. 4, f. 71, pl. 6, fs. 70, 72, 73.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3250 m., terrestrial on open rocky slope with shrubs. (H. J. LAM n. 1621, October 1920; "sepals and petals greenish white, lip with a small round orange-coloured blotch at the base of the blade, column white, pollinia brownish yellow").

According to a note of Dr. LAM the species occurs also on Doorman-top at an elevation of 3450 m., but there is no material.

This curious plant is apparently not very rare on the central mountains of New-Guinea, as it has been collected by three expeditions.

H. N. RIDLEY described and figured the plant once more under the name of *Giulianett(i)a disticha* Ridl.

Calanthe arundinoides J. J. S. n. sp.

Tab. XLVII, 16.

Caulis elongatus, pars adest c. 8 cm. longa, teres, c. 0.3 cm. diam., internodiis c. 1.1 cm. longis. Folia alternatim bifaria, erecta, anguste linearia, apicem versus sensim angustata, acuta, margine celluloso-erosula, canaliculata, rigida, c. 8.75 cm. longa, 0.325 cm. lata; vaginae tubulosae, internodia superantes, superne antice rumpentes et in utraque parte basis laminae dente obtuso vel subacuto instructae, prominenter nervosae. Inflorescentiae axillares, erecto-patentes, laxe pauciflorae, pedunculo c. 2.25 cm. longo omnino vaginulis superne in bracteas vergentibus basi tantum tubulosis superne canaliculatis ad c. 2 cm. longis donato, rachide flexuosa, c. 2.5 cm. longa. Bracteae erectae, basi rachidem amplectentes, e basi oblonga sensim longe

attenuatae, acutae, conduplicato-canaliculatae, 9-nerviae, ad c. 3.4 cm. longae, 0.8 cm. latae, superiores minores. Flores mediocres, c. 2 cm. longi, sepalis petalisque conniventibus. Sepalum dorsale ovato-ellipticum, acute acuminatum, concavum, 5-nervium, c. 1.5 cm. longum, 0.75 cm. latum. Sepala lateralia basin calcaris amplectentia, oblique ovata, sensim acutata, acuta, apiculata, concava, 5-nervia, c. 1.5 cm. longa, 0.65 cm. lata. Petala oblique subspathulato-elliptica, breviter acuminato-apiculata, 3-nervia, c. 1.2 cm. longa, 0.625 cm. lata. Labellum gynostemio in formam tubuli a latere compressi adnatum, simplex, calcaratum; lamina porrecta, cum calcari et gynostemio angulos subrectos faciens, concava, marginibus superne incurvis ambitu quinquangularis, 7-nervia, ima basi in fauce tubuli callis 2 parvis humilibus convexis donata, explanata rotundato-quadrata, apice late rotundata, erosula, minute papillosa, c. 0.5 cm. longa et lata; calcar cum ovario angulum acutum faciens, oblique a latere compresso-conicum, obtusum, facie antica leviter sigmoideum, lateribus convexum, postice c. 0.75 cm., antice usque ad basin laminae bene 1 cm. longum. Gynostemium tota longitudine labello adnatum, superne leviter incurvulum, marginibus superne valde dilatatis antice verticaliter truncatum, extus utrinque longitudinaliter sulcatum, c. 0.7 cm. longum, clinandrio alte excavato, margine crenato. Anthera cucullata, supra visa reniformis, apice leviter exciso-truncata, dorso gibbosa, c. 0.17 cm. lata. Pollinia 8, breviter pyriformia, caudiculis glandula cordato-reniformi inserta. Stigma bicrure, V-forme. Ovarium 6-sulcatum, glabrum, c. 0.7 cm. longum; pedicellus glaber, c. 0.45 cm. longus.

Dutch New-Guinea: In the northern part, ridge, c. 70 km. to the north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 2, July—August 1914).

This is the fourth species of the section *Caulodes*. It differs from the others, viz. *C. caulescens* J. J. S., *C. apostasioides* Schltr. and *C. Versteegii* J. J. S. in the leaves resembling those of an *Arundina*, and in the parts of the flowers. There is no note concerning the colour.

Description from a specimen preserved in alcohol.

Sec. Rhodochilus.

Calanthe Manis J. J. S. n. sp.

Tab. XLVII, 17.

Pseudobulbi breves, omnino vaginis inclusi, radicibus longe villosis. Folia c. 7, alternatim bifaria, articulata, erecta, recurvula, sessilia, anguste linearia, apicem versus sensim angustata, acuta, basi conduplicata, glabra, nervis c. 5—7 sicco subtus prominentibus, sicco satis rigida, ad c. 30 cm. longa, sicco 0.6—0.65 cm. lata; vaginae erecto-patentes, canaliculatae, basin versus dilatatae et tubulosae, ad c. 4.75 cm. longae. Inflorescentia axillaris, erecta, foliis multo brevior, dense quaquaverse multiflora, pedunculo c. 7 cm. longo, omnino vaginulis magnis superne accrescentibus erectis laxe adpressis e basi tubulosa ovatis acuminatis acutatisve sicco prominenter nervosis et coriaceis ad c. 4.2 cm. longis tecto, rachide c. 8 cm. longa. Bracteae numerosae, erectae, imbricatae, ovato-lanceolatae, apicem versus sensim angustatae, apice saepe breviter incurvae, concavae, glabrae, sicco prominenter nervosae, ad c. 4.2 cm. longae, sicco 0.8 cm. latae. Flores parvuli, inter bracteas absconditi, erecti, glabri, c. 1 cm. longi, 0.57 cm. lati. Sepalum dorsale erectum, incurvum, apice recurvulum, concavum, oblongum, obtusum, 3-nervium, c. 0.8 cm. longum, fere 0.4 cm. latum. Sepala lateralia patentia, supra medium

recurva, basin calcaris amplectentia, oblique subovato-oblonga, apicem versus angustata, obtusa, 3-nervia, c. 0.575 cm., margine antico 0.68 cm. longa, 0.275 cm. lata. Petala valde oblique subelliptico-obovata, falcata, apice obtusangula, minute apiculata, basi unguiculato-contracta, margine antico obtusangule dilatata, concava, 3-nervia, c. 0.65—0.7 cm. longa, 0.36—0.4 cm., basi 0.15 cm. lata. Labellum simplex, calcaratum, longitudine c. 0.4 cm. gynostemio in formam tubi alti a latere compressi antice late rotundati adnatum, totum c. 0.7 cm. longum; lamina cum apice gynostemii angulum acutum faciens, porrecta, recurva, marginibus apicem versus incurvis, supra fascia longitudinali convexo-incrassata apice angustata apicem labelli attingente ad basin laminae in apice tubi in callum longitudinalem oblongo-ovalem laevem terminante, glabra, explanata quinquangulari-oblonga, apicem versus leviter dilatata, obtusa, c. 0.4 cm. longa, basi 0.16 cm., superne 0.24 cm. lata; calcar ovario parallelum reversum, paululum a dorso compressum, oblongo-ovale, rotundatum, c. 0.25 cm. longum. Gynostemium tota longitudine labello adnatum, rectum, apice tantum incurvulum, lateraliter compressum, subtus alte canaliculatum, c. 0.3 cm. longum, clinandrio alte excavato triangulo, auriculis brevissimis latis obtusangulis. Anthera cucullata, transverse reniformi-quadrangula, apice truncata, basi bilobula, connectivo late triangulo convexo-incrassato, bene 0.15 cm. lata. Rostellum latum, vix excisum. Stigma alte excavatum, transverse oblongum. Ovarium sessile, alte 6-sulcatum, c. 0.875 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2700 m., terrestrial in mossy forest. (H. J. LAM n. 1822, 30 October 1920; "roots light brown, leaves rather dark green somewhat paler beneath, peduncle light green, bracts light green with a greenish white base and darker green longitudinal lines, sepals dirty greyish brown, tips and spur lighter, petals dirty brownish grey or nearly colourless, lip dirty orange, column dirty greyish brown, ovary colourless").

This species differs from *C. rhodochila* Schltr. and *C. breviscapa* J. J. S. in the narrow sessile leaves, very long bracts much surpassing the flowers, the colour of the flowers, and the short spur.

Description from a dried specimen and a flower preserved in alcohol.

Calanthe leucosceptrum Schltr. Orch. D. N. Guinea (1912), 388.

var. **bisubulifera** J. J. S. n. var.

Tab. XLVIII, 18.

Pseudobulbi c. 0.7 cm. inter se distantes, cum rhizomate angulos acutos facientes, 5—6-folii, foliis inferioribus minoribus in vaginas vergentibus. Folia lineari-lanceolata, longissime angustata, acuta, basi sensim petiolato-angustata, glabra, nervis 3 primariis dorso prominentibus, sicco papyracea, ad c. 37 cm. longa, 2 cm. lata; petiolus cum vagina 3-costatus, c. 13 cm. longus. Inflorescentia axillaris, erecta, pluriflora, glabra, pedunculo c. 31 cm. longo, vaginulis c. 8 apiculatis superne majoribus laxioribus subinflatis ad c. 3.5 cm. longis donato, rachide c. 5 cm. longa. Bracteae mox caducae. Flores c. 12, quaquaversi, mediocres, glabri, macerati c. 2.75 cm. longi. Sepalum dorsale ovale, abrupte subulato-acuminatum, concavum, 3 (sub 5)-nervium, c. 1.1 cm. longum, 0.62 cm. latum. Sepala lateralia oblique ovata, acuta, apiculata, margine antico basi paululum producta, leviter concava, 5(—6)-nervia, c. 1.25 cm. longa, 0.65 cm. lata. Petala suboblique elliptica, apice triangulo-contracta, acuta, basi breviter contracta,

concava, dorso longitudinaliter sulcata, 3-nervia, c. 1 cm. longa, 0.675 cm. lata. Labellum 3-lobum, calcaratum, gynostemio longitudine c. 0.5 cm. in formam tubi a latere compressi alti adnatum, lamina porrecta, ecallosa, explanata c. 0.7 cm., usque apicem loborum lateralium 0.3 cm. longa, ad lobos laterales 0.6 cm. lata; lobi laterales parvi, erecti, porrecti, falcatulo-trianguli, acuti, margine exteriore rotundati; lobus intermedius multo major, marginibus incurvis antice canaliculatus, quadratus, apice truncatus cum lobulo obtuso, angulis rotundatus, irregulariter marginatus, c. 0.43 cm. longus et latus; calcar cum ovario angulum anguste acutum faciens, elongatum, tenue, leviter sigmoideum, apice vix amplicatum, obtusum, basi ampliatum et lateraliter compressum, c. 1.75 cm. longum. Gynostemium in genere longiusculum, antice valde oblique truncatum, dorso convexum, c. 0.625 cm. longum, clinandrio excavato margine postico exciso et utrinque dentato, auriculis brevissimis cum dente tenuiter subulato et dente brevi. Anthera cucullata, cordata, apicem versus angustata, obtusa, basi rotundato-biloba, connectivo convexo-incrassato, c. 0.2 cm. lata. Rostellum oblique porrectum, elongatum, subulatum. Stigma transversum. Ovarium 6-sulcatum, glabrum, c. 0.8 cm. longum; pedicellus tenuior, 1.3 cm. longus.

Dutch New-Guinea: In the northern part, east-slope of ridge to Doorman-top, 800 m., nearly flat country, marshy forest. (H. J. LAM n. 1413, 29 August 1920; "leaves dark green, peduncle greenish white, bracts greenish white streaked light green longitudinally, flowers pure white, top of column a little light brown, ovary and fruit white").

The only plant collected by Dr. LAM is perhaps a poor or young specimen of *C. leucosceptrum* Schltr. It differs from SCHLECHTER's description in the acute petals, the blunt anther and clinandrium provided with an awl on each side. A copy of Dr. SCHLECHTER's sketch of flower and lip agrees wholly with mine.

Description from herbarium and a flower preserved in alcohol.

Sect. Eucalanthe.

Calanthe veratrifolia R. Br. in Bot. Reg. IX (1823), t. 270; etc.

Schouten Islands: Island of Biak, north-coast near Wari, terrestrial on coral-lime covered with moss. (W. FEUILLETAU DE BRUYN n. 393, 6 September 1915; "flowers white").

Aulostylis Schltr.

SCHLECHTER proposed this new genus with some hesitation in „die Orchidaceen von Deutsch-Neu-Guinea" p. 391. A few years ago the Buitenzorg Herbarium received from Dr. SCHLECHTER in exchange a number of his Papuan plants, among which a specimen of *Aulostylis papuana* Schltr. (n. 17665). On examination of one of the flowers it proved to be a regular peloria with petallike lip, and the column straight and cupshaped at top. I found one anther but no rostellum.

It results from the above that the genus *Aulostylis* Schltr. can not be upheld. I propose for it the name **Calanthe papuana** (Schltr.) J. J. S. It is interesting that no normal flowers were met with. The same is the case with *Dendrobium normale* Falc., *D. tetrodon* Rchb.f., (in West-Java), *D. atavus* J. J. S., some species of *Appendicula* etc.

Eulophia R. Br.

Eulophia Dahliana Krzl. in Notizbl. Berl. I (1897), 243; etc.

Dutch New-Guinea: In the northern part. (A. C. Th. Thomsen n. 682; without further notes).

Eulophia macrostachya Lndl. Gen. et sp. Orch. (1833), 183; etc.

Schouten Islands: Island Biak, south-coast, Bosnik, sandy soil. (W. Feuilletau de Bruyn n. 355, 31 August 1915).

Microstylis Nutt.

Sect. Crepidium.

Microstylis retusa J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 29; in N. Guinea VIII (1909), 33, t. XI, 34.

var. **brevis** J. J. S. n. var.

Differt a typo inflorescentia breviore, floribus minoribus, labelli lobo intermedio dentes proximos aequante.

Dutch New-Guinea: In the northern part, Idenburg-river, 150 m., swampy bank. (W. Feuilletau de Bruyn n. 84, 20 September 1914; "flowers light yellow").

When more material is available the plant perhaps will prove to be specifically distinct. Only two small specimina were collected.

Microstylis lata J. J. S. n. sp.

Tab. XLVIII, 19.

Caulis brevis, erectus, radicans, brevinodis, dense multifolius, c. 3.5 cm. longus, internodiis c. 0.3 cm. longis. Folia c. 9, oblique oblongo- ad lanceolato-ovata, subfalcatula, apicem versus sensim angustata, obtusa, apiculata, manifeste crispata, nervis 3 primariis supra sulcatis subtus carinatis, supra inter nervos convexa, c. 2.4—4.3 cm. longa, 1.2—1.5 cm. lata; petiolus canaliculatus, dorso 3-angulatus, cum vagina brevi tubulosa c. 1.2 cm. longus. Inflorescentia erecta, laxius multiflora, pedunculo anguste alato-angulato, bene 10 cm. longo, vaginula bracteiformi donato, rachide alato-costata, c. 9.5 cm. longa. Bracteae reflexae, lanceolato-triangulae, acutae, concavae, usque ad bene 0.3 cm. longae. Flores parvuli, c. 0.375 cm. lati, sepalis petalisque valde recurvis convexisque. Sepalum dorsale ovale, obtusum, 3-nervium, c. 0.36 cm. longum, 0.22 cm. latum. Sepala lateralia oblique ovalia, rotundata, margine valde recurvo, 3-nervia, fere 0.3 cm. longa, 0.2 cm. lata. Petala suboblique lanceolata, obtusa, valde convexa, 1-nervia, c. 0.32 cm. longa, 0.1 cm. lata. Labellum concavum, marginibus apiceque incurvis, 3-nervium, explanatum ambitu transverse quadrangulum, c. 0.26 cm., cum auriculis 0.4 cm. longum, fere 0.5 cm. latum, fovea subtriangula concava, lobo intermedio ambitu aequilateraliter trapeziformi sinu rotundato fere ad medium in dentes 2 remotos falcatulo-triangulos obtusiusculos fisso, c. 0.5 cm. longo, bene 0.1 cm. lato, dentibus subulatis ad triangulis extrorsum decrescentibus c. 4 utrinque, dentibus interioribus lobo intermedio subaequilongis, auriculis valde remotis, breviusculis, oblique triangulis, anguste obtusis, c. 0.125 cm. longis. Gynostemium breve, dorso convexum, c. 0.12 cm. longum, clinandrio cum dorso columnae angulum obtusum faciente, auriculis porrectis, leviter incurvulis, antheram superantibus, oblongis, obtusis. Anthera leviter

cucullata, transversa, reniformis, obtusa, fere 0.05 cm. lata. Rostellum membranaceum, auriculis brevius. Ovarium pedicellatum conspicue 6-costatum, c. 0.25 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo, near Pionier-bivouac, 50 m., hilly country, forest. (H. J. LAM n. 2104, 9 January 1921; "leaves dark violet above, dirty violet green beneath, petiole violet, inflorescence pale green with a little violet, bracts dirty green, flowers yellow, changing to orange, column light yellow, fruit dirty green").

Remarkable for the broad and rather short lip nearly truncate at the apex, and the midlobe the teeth of which are separated by a relatively broad rounded sinus.

Description from a specimen preserved in alcohol.

Microstylis Lamii J. J. S. n. sp.

Tab. XLVIII, 20.

Caulis e basi decumbente radicante adscendens, parte erecta ramosa (4 ramis), compacta, ramis c. 5-foliis, internodiis c. 0.3—0.7 cm. longis. Folia oblique ovato-oblonga ad ovata, apice leviter triangulo-contracta, acuta, basi valde obliqua, nervis primariis 3—5, undulata, c. 3—6.3 cm. longa, 1.5—2.4 cm. lata; petiolus brevis, canaliculatus, cum vagina tubulosa c. 0.8—1.2 cm. longus. Inflorescentia erecta, elongata, diu flores gignens, laxe multiflora, pedunculo angulato, bene 10 cm. longo, vaginula bracteiformi donato, rachide angulato-alata, 21 cm. superante. Bracteae reflexae, lanceolato-triangulae, acutae, concavae, ad c. 0.4 cm. longae. Flores quaquaversi, patentissimi, mediocres, c. 0.47 cm. lati, 0.55 cm. longi, sepalis petalisque patentissimis paululum reflexis valde convexis. Sepalum dorsale ovatum, obtusum, 3-nervium, c. 0.34 cm. longum, 0.22 cm. latum. Sepala lateralia divergentia, oblique late ovato-ovalia, obtusa, 3-nervia, c. 0.3 cm. longa, 0.24 cm. lata. Petala oblique oblonga, vix falcatula, apicem versus vix dilatata, obtusa, 1-nervia, c. 0.3 cm. longa, 0.125 cm. lata. Labellum hippocrepidiforme, concavum, lamella transversa parva obtusangule triangula basi gynostemii adpressa ad basin, fovea longitudinali lineari-oblonga margine incrassata, explanatum ambitu quinquangulare, fere 0.3 cm., cum auriculis 0.45 cm. longum, 0.4 cm. latum, lobo intermedio ambitu triangulo vel semielliptico fere usque medium in dentes 2 oblique triangulos acutos sinu angusto separatos fisso c. 0.1 cm. longo 0.17 cm. lato, laciniis 3 subulatis lobo medio brevioribus extrorsum decrescentibus utrinque, lacinia exteriore dentiformi triangulo, auriculis incurvis triangulis obtusis c. 0.15 cm. longis. Gynostemium a dorso compressum, oblongo-quadrangulum, dorso convexum, c. 0.14 cm. longum, clinandrio concavo cum dorso gynostemii angulum obtusum faciente, auriculis porrectis parallelis verticalibus obtusis antheram superantibus. Anthera leviter cucullata, transversa, reniformis, obtusissima, c. 0.07 cm. lata. Pollinia 4, pyriformia, in corpuscula 2 late obovata unita, praesertim exteriora curvula, c. 0.04 cm. longa. Stigma transversum, semilunatum. Ovarium pedicellatum obtusangule curvatum, 6-angulatum, c. 0.45 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo, 20 m., forest. (H. J. LAM n. 545, 4 July 1920; "leaves light green beneath, dirty yellowish violet above, peduncle bracts and ovary glaring violet, sepals and petals yellowish violet, lip yellow with a purple centre, column yellow").

Resembling *M. fastigiata* Schltr. but the inflorescence longer, the lip broader, concave,

with a triangular midlobe with acute teeth, broad triangular obtuse auricles and the column not enlarged to the top.

Description from a dried specimen and an inflorescence preserved in alcohol.

Microstylis Floscularia J. J. S. n. sp.

Tab. XLIX, 21.

Caulis repens, radicans, apice adscendens, c. 11—21 cm. longus, c. 9—17-folius. Folia oblique ovata ad oblongo-ovata, apice triangulo-acutata, acuta, basi obliqua, supra inter nervos primarios supra sulcatos subtus carinatos convexa, crispula, tenuia, c. 1.5—4.1 cm. longa, 0.83—1.8 cm. lata; petiolus canaliculatus, cum vagina tubulosa 1—1.8 cm. longus. Inflorescentia erecta, laxe multiflora, pedunculo c. 3—5.5 cm. longo, vaginulis raris bracteiformibus donato, rachide alato-angulata, c. 4.5—12 cm. longa. Bracteae reflexae, triangulo-lanceolatae, acutae, ad c. 0.275—0.5 cm. longae. Flores parvi, quaquaversi, sepalis patalisque recurvis. Sepalum dorsale ovali-ovatum, obtusum, convexum, apice concavum, 3-nervium c. 0.23—0.24 cm. longum, 0.14—0.15 cm. latum. Sepala lateralia oblique ovalia, obtusa, convexa, apice concava, 3-nervia, c. 0.24—0.25 cm. longa, 0.15—0.16 cm. lata. Petala revoluta, linearia, oblique obtusa, convexa, 1-nervia, c. 0.2 cm. longa, 0.05 cm. lata. Labellum hippocrepidiforme, lamella humili transversa basi gynostemii adpressa ad basin, fovea longitudinali, anguste oblonga, marginibus incrassata, explanatum a basi usque ad apicem lobi intermedii c. 0.2 cm., cum auriculis 0.375—0.38 cm. longum, 0.25—0.27 cm. latum, lobo intermedio semielliptico, fere ad medium in dentes 2 falcato-triangulos acutos fisso, c. 0.05 cm. longo, 0.075 cm. lato, laciniis 4 elongatis subulato-filiformibus lobum intermedium bene superantibus ad c. 0.125—0.15 longis utrinque, laciniis interioribus incurvulis exterioribus recurvis, lacinia extrema brevissima, dentiformi vel interdum dente brevi addito, auriculis remotis, triangulis, falcato-incurvis, acutis, c. 0.13—0.15 cm. longis, basi c. 0.1 cm. latis. Gynostemium a dorso compressum, quadrangulum, superne leviter dilatatum, fere 0.1 cm. longum, apice aequilatum, clinandrio concavo cum costula longitudinali, auriculis divergentibus, oblongo-quadrangulis, oblique truncato-obtusis. Anthera subplana, transversa, reniformis, obtusissima. Pollinia 4, in corpuscula 2 oblique obovata unita, c. 0.02 cm. longa. Rostellum membranaceum, aequilateraliter trapeziforme, truncatum, antheram vix superans. Ovarium pedicellatum 6-angulatum, c. 0.2 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo near Prauwen-bivouac, 100—180 m., forest, on mossy stones. (H. J. LAM n. 940, 29 August 1920; "stem light green suffused with purple, leaves light green, peduncle and bracts prettily dark violet, sepals lilac, petals light lilac, lip with light green auricles, a lilac centre and teeth, column violet and yellow, fruit lilac, afterwards dark violet"; n. 1076, 6 September 1920; "stem and sheaths prettily dark violet, leaves light green, peduncle and bracts dark violet, sepals and petals greenish violet, lip violet, column yellow, ovary greenish violet"; n. 1215, 15 September 1920; "stem and leaves light green, suffused violet, peduncle, bracts and buds dark violet, sepals violet, petals yellowish green and a little violet, lip light yellow with the margins, teeth and centre violet, column dark violet, ovary yellowish with broad violet streaks, fruit and pedicel prettily purple"; n. 1216, 15 September 1920; "stem, leaves and sheaths light green, peduncle light green hardly a little violet upwards, sepals and petals greenish yellow, lip with the teeth hardly violet, dark violet in the centre, column yellowish green with a little dark violet, fruit yellowish brown with thin hardly violet streaks"). West of Doorman-river, 350 m., bank of rivulet. (H. J. LAM n. 1316, 23 September 1920; "stem violet, leaves light green, petiole and sheath violet, peduncle and bracts dark violet, sepals

petals and lip greenish violet, lip with violet margin and a dark violet centre, colum dark violet, with yellow top, ovary and fruit dark violet").

The nearest ally of this species seems to be *M. fissa* Schltr. from which it differs in the lax inflorescence, smaller flowers, broader auricles of the lip, a shorter ovary.

I have copied the elaborate colour notations of Dr. LAM in order to show that the quantity of violet in the vegetative parts as well as in the inflorescence is very variable. This is of no rare occurrence in *Microstylis*; it is known f. i, in *M. commelinifolia* Zoll., *M. Blumei* Boerl. et J. J. S., *M. latifolia* J. J. S., *M. Junghuhnii* J. J. S., *M. decumbens* Schltr., etc.

In our species it often occurs, as the material shows, that the flowers, that is to say the ovaries, are transformed into galls. All the flowers of a raceme may be so attacked or only in part. Usually such flowers do not open, and they show some remarkable alterations, especially in the labellum. In stead of being horse-shoe shaped it is transversely oval-oblong with suppression of the auricles, and only shortly toothed at the apex. I have little doubt that *M. nephroglossa* Schltr. and *M. latilabris* Schltr. are based on such abnormal flowers.

Description from herbarium and materials preserved in alcohol.

Oberonia Lindl.

Sect. Labidous.

Oberonia Thomsenii J. J. S. n. sp.

Tab. XLIX, 22.

Caules elongati, compressi, c. 16—25 cm. longi, cum vaginis c. 0.6—0.75 cm. lati, internodiis ad c. 1.3 cm. longis, superioribus brevioribus. Folia c. 11—14 utrinque, lateraliter compressa, brevia, erecta, inarticulata, apice triangulo acuto in dentem producto vel apiculato c. 0.1—0.6 cm. longo excepto supra fissa, tota c. 1.4—2.2 cm. longa; vaginae tubulosae, lateraliter compressae. Inflorescentia terminalis, cylindrica, dense multiflora, superne laxior, c. 8—9 cm. longa, 0.33—0.4 cm. diam., rachide multicostata, glabra. Bracteae persistentes, patentissimae, oblongo-quinquangulares, acutae, concavae, superne erosulae, c. 0.1 cm. longae. Flores in pseudoverticillos ad c. 9-floros dispositi, parvi, c. 0.2 cm. longi, sepalis petalisque revolutis. Sepalum dorsale ovatum, obtusum, convexum, bene 0.1 cm. longum, 0.075 cm. latum. Sepala lateralia oblique ovata, obtusa, basi lata, convexa, bene 0.1 cm. longa, fere 0.1 cm. lata. Petala quam sepala minus revoluta, linearia, irregulariter marginata, apice obliquo subdentata, convexa, c. 0.1 cm. longa, 0.03 cm. lata. Labellum 3-lobum, 3-nervium, callo satis conspicuo orbiculari excavationibus 2 parvis collateralibus instructo ad basin, totum c. 0.23 cm., usque ad locum insertionis 0.175 cm. longum; lobi laterales (auriculae), erecti, gynostemium amplectentes, satis conspicui, oblique oblongi, explanati oblique rhombei, falcatuli, obtusi, irregulariter marginati, antice angulato-convexi cum carina longitudinali, dorso angulato-concavi, c. 0.06 cm. longi; lobus intermedius bene major, porrectus, concavus, ambitu elleptico-ovalis, basi paulo constrictus, usque ad $^2/_5$ partes infra apicem bifidus, marginibus exterioribus basi excepta lacinulatus, laciniis apicalibus parallelis oblique triangulis acutis sinu lineari in fundo dente reverso brevi obtuso donato separatis, c. 0.125 cm. longus, 0.1 cm. latus. Gynostemium brevissimum, basi contractum, c. 0.04 cm. longum, clinandrio conspicuo transverso excavato, auriculis obtusis. Anthera cucullata, transverse subovalis, connectivo longitudinali incrassato

apice in rostrum breve obtusum producto. Rostellum recurvum. Stigma quadrangulum, margine leviter elevato. Ovarium crassiusculum, glabrum, c. 0.1 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26—40 m., epiphytical in forest. (A. C. TH. THOMSEN, n. 689, 20 April 1914; "flowers yellow"; n. 881, 22 September 1914; "flowers red").

Near *O. wariana* Schltr. but the lip conspicuously lacinulate, the apical laciniae acute, and with a reversed tooth at the bottom of the sinus separating them.

Description from herbarium and materials preserved in alcohol.

Oberonia wariana Schltr. Orch. D. N. Guinea (1911), 147; Fig. Atl. t. LVI, n. 197.

Dutch New-Guinea: In the northern part, lower Arsom-river, upper Tami, 85 m., epiphytical in forest. (K. GJELLERUP n. 31, 29 March 1910; "flowers brownish yellow").

I have little doubt that this plant is *O. wariana* Schltr. as Dr. SCHLECHTER's sketch tallies very well with mine.

Sect. Diurium.

Oberonia diura Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 111; Orch. D. N. Guinea (1911), 154; Fig. Atl. t. LIX, n. 210; J. J. S. in N. Guinea XII (1915), 216, t. LXX, 120.

Dutch New-Guinea: In the northern part, near Doorman-river, 200 m., epiphytical in bank-forest. (H. J. LAM n. 1286; "sepals and petals prettily light brown, lip darker with brownish green lacinia").

Sect. Otoglossum.

Oberonia linearis Schltr. Orch. D. N. Guinea (1911), 164; Fig. Atl. t. LXIV, n. 227. — *O. stenophylla* Schltr. (nec Ridl.) in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 113. — *O. alipetala* J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 56; in N. Guinea XIII (1915), 215, t. LXIX, 119.

var. **brevipetala** J. J. S. n. var.

Differt a forma typica petalis brevioribus, oblique ovatis.

Dutch New-Guinea: In the northern part, bank of small river west of Doorman-river, 350 m., epiphytical. (H. J. LAM n. 1298, 23 September 1920; "leaves light green, rachis light dirty red, flowers brownish red, column with a white tip").

Evidendently *O. alipetala* J. J. S. is nothing else than *O. linearis* Schltr.

The variety differs only in the shorter petals.

Oberonia serpentinicaulis J. J. S. n. sp.

Tab. XLIX, 23.

Rhizoma repens, ramosum, tenue, longinode, ad basin caulium tantum radicans, vaginis tubulosis acutis praesertim superioribus laminam parvam gerentibus. Caules c. 1.1—1.3 cm. dissiti, elongati, serpentini, c. 5—7-folii, absque inflorescentia c. 2—5 cm. longi. Folia equitantia, erecto-patentia, saepe plus minusve falcato-incurvula, linearia, acuta, saepe subulato-acuminata, inferne supra fissa et membranaceo-marginata, vagina brevi tubulosa antice mem-

branacea, infima brevissima, mediana c. 3.75—7 cm. longa, parte non fissa c. 2.25—4.75 cm. longa, 0.25—0.35 cm. lata. Inflorescentia multiflora, pedunculo c. 1 cm. longo, vaginula subadpressa subulata membranaceo-marginata c. 0.2—0.5 cm. longa donato, rachide anguste alato-angulata, glabra, c. 3.5—5.5 cm. longa. Bracteae adpressae, oblongo-triangulae, subacuminatae, concavae, erosae, c. 0.1 cm. longae, 0.05 cm. latae. Flores in verticillos spurios c. 7-floros vel plus minusve spiraliter dispositi, parvi, patentissimi, c. 0.13 cm. lati. Sepalum dorsale triangulum, apice recurvum, subacutum, concavum, bene 0.05 cm. longum, 0.04 cm. latum. Sepala lateralia dimidio superiore valde recurva, valde convexa, suboblique triangula, subacuta, c. 0.075 cm. longa, fere 0.05 cm. lata. Petala patentissima, angulum late obtusum facientia, suboblique anguste triangula, c. 0.06 cm. longa, 0.03 cm. lata. Labellum 3-lobum, basi concavum, explanatum ambitu subquadrangulum, bene 0.075 cm. longum, ad lobos laterales et ad lobum intermedium 0.06 cm. latum; lobi laterales gynostemium amplectentes, parvuli, suboblongo-quadranguli, obtusi; lobus intermedius conspicuus, latus, ambitu e basi late subcuneata sexangulatus, apice late obtusissime bilobulus, subirregulariter marginatus, c. 0.05 cm. longus. Gynostemium brevissimum. Anthera cucullata, transverse ovalis. Ovarium c. 0.08 cm. longum.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 500 m., epiphytical in forest. (W. FEUILLETAU DE BRUYN n. 90, 12 September 1914; "fl. brown red").

This calls to mind *O. breviscapa* Schltr. but the stems are longer with more leaves, the inflorescence longer, the form of the petals different and the lip much less deeply lobed.

The other allied species hitherto described, viz. *O. rhizomatosa* J. J. S. and *O. repens* Schltr. are still more different.

Description from herbarium only.

Sect. Platyacron.

Oberonia wappeana J. J. S. n. sp.

Tab. XLIX, 24.

Caules elongati, pars adest c. 6 cm. longa, compressa, leviter serpentina, 5—6-folia, internodiis c. 0.65—1 cm. longis. Folia erecto-patentia, falcato-incurva, inarticulata, lateraliter compressa, oblique lanceolata, acutissima, carnosa, parte inferiore supra fissa, basi sensim in vaginam tubulosam lateraliter compressam ensiformem abientia, tota c. 1.3—4.7 cm. longa, parte apicali non fissa c. 0.6—2.9 cm. longa, 0.33—0.5 cm. lata. Inflorescentia subsessilis, laxe multiflora, superne laxior, c. 10—11.5 cm. longa, rachide costata. Bracteae adpressae, triangulo-lanceolatae, acuminatae, concavae, dorso carinatae, marginibus carinaque erosulae, 1-nerviae, c. 0.2 cm. longae. Flores in pseudoverticillos c. 8-floros dispositi, subpatentissimi, c. 0.22 cm. lati, sepalis petalisque patentissimis. Sepalum dorsale ovatum, obtusum, 1-nervium, c. 0.125 cm. longum, fere 0.1 cm. latum. Sepala lateralia oblique ovata, obtusa, minutissime apiculata, leviter convexa, 1-nervia, c. 0.12 cm. longa, fere 0.1 cm. lata. Petala oblonga, obtusa, basi truncata utrinque rotundata medio tantum inserta, basi excepta erosula, 1-nervia, c. 0.12 cm. longa, 0.06 cm. lata. Labellum subplanum, basi biauriculatum, in $^1/_3$ supra basi constrictum, excavatione suborbiculari dorso convexa ad basin, 3-nervium, totum c. 0.175 cm. longum, ad auriculas 0.1 cm. latum, auriculis erectis, petalis adpressis, gynostemium semiamplectentibus, oblique suborbicularibus, lobo intermedio multo majore, obverse reniformi, usque ad medium

bifido, apicem versus dilatato, lobulis oblique orbiculari-quadrangulis ad quinquangularibus sinu angusto separatis laxe erosulis, c. 0.12 cm. longo, 0.15 cm. lato. Gynostemium minutum, apice truncatum, c. 0.05 cm. longum, clinandrio concavo. Anthera cucullata, transverse subovalis, connectivo convexo-incrassato et apice in rostrum breve rotundatum producto, c. 0.02 cm. lata. Pollinia 4, in corpuscula 2 subsemiglobosa unita. Stigma suborbiculare. Ovarium pedicellatum c. 0.23 cm. longum.

Dutch New-Guinea: South coast of Geelvink-bay, Jabi-mountains, Wappe, epiphytical in forest. (R. F. JANOWSKY n. 410, 5 June 1913; "plant 20 cm. long, flowers orange").

This species belongs to SCHLECHTER's section *Platyacron*. In the shape of the lip it much resembles *O. phleoides* Schltr. but I have seen no papillae on the inflorescence or flowers. Moreover the inflorescence is twice as long and not dense, the flowers are larger, the petals blunter and the lip more deeply lobed.

Description from herbarium and material preserved in alcohol. No complete plant was collected but doubtless the stems at hand were cut off near the base, the lower most leaf present being much smaller than the rest.

Hippeophyllum Schltr.

Hippeophyllum biakenae J. J. S. n. sp.

Tab. L, 25.

Rhizoma elongatum, repens, ramosum, teres, longinode, vaginis tubulosis, carinatis, internodiis multo brevioribus. Caules brevissimi, c. 2—6 cm. dissiti, c. 5—8-folii. Folia erecto-patentia, a latere compressa, linearia, plus minusve falcata, acuta, intermedia maxima, sicco ad c. 6.5—8.5 cm. longa, 0.3—0.4 cm. lata; vaginae tubulosae, a latere compressae, antice membranaceae, mox rumpentes et irregulariter membranaceo-marginatae, ad c. 1 cm. longae, Inflorescentia erecta, multiflora, pedunculo c. 1.5—1.75 cm. longo, nonnullis vaginulis adpressis bracteiformibus donato, rachide angulata, glabra, c. 8—11 cm. longa. Bracteae pedicello adpressae, ovatae, obtusae, concavae, erosulo-ciliolatae, dorso carinatae, c. 0.175—0.2 cm. longae, 0.13 cm. latae. Flores parvi, c. 0.34 cm. lati. Sepalum dorsale oblongum, subobtusum, convexum, 1-nervium, c. 0.175 cm. longum, 0.08 cm. latum. Sepala lateralia reflexa, oblique oblonga, subobtusa, convexa, 1-nervia, c. 0.17 cm. longa, 0.07 cm. lata. Petala patentissima, linearia, obtusa, convexa, 1-nervia, c. 0.17 cm. longa, 0.04 cm. lata. Labellum porrectum, cum gynostemio angulum acutum faciens, 3-lobum, concavum, subtus convexum, 3-nervium, basi callis 2 excavatione separatis donatum, inexplanatum c. 0.125 cm. longum, explanatum ambitu quinquangulare, c. 0.17 cm. longum, ad lobos laterales 0.1 cm. vix superans; lobi laterales erecti, porrecti, breves, gynostemium vix superantes, rotundati, convexi, cum parte basali labelli hypochylium subquadratum ad lobos laterales paulum dilatatum basi utrinque rotundato-angustatum formantes; lobus intermedius recurvus, late ovato-triangulus, basi utrinque rotundatus, leviter triangulo-acuminatus, obtusus, hypochylio paulo angustior, vix 0.07 cm. longus, 0.08 cm. latus. Gynostemium rectum, paulum a dorso compressum, dorso convexum, absque anthera c. 0.1 cm. longum, clinandrio obliquo concavo, auriculis triangulis concavis. Anthera cucullata, ovato-ovalis, apice rotundata, basi truncata, c. 0.05 cm. longa, parte inferiore quadrata cum thecis subparallelis, appendice aequilonga, vix angustiore, semiovali. Rostellum triangulare,

obtusum, auriculis brevius. Stigma parvum. Ovarium pedicellatum superne puberulo-papillosum, c. 0.26 cm. longum.

Schouten Islands: Isle of Biak, near Bosnek, epiphytic on strand tree. (L. S. GIBBS n. 6283, January 1913; "fl. white"). As quoted, north coast, Wari, in full sun. (W. FEUILLETAU DE BRUYN n. 386, 4 September 1915; "fl. white").

More material showed that this plant which I thought before to be identical with *H. alboviride* J. J. S. is specifically distinct from that species. It is a smaller plant, with shorter pedicels, the petals not enlarged towards the apex and the anther with a narrower appendix.

Both collectors describe the flowers as white; in the dried flowers of Gibbs n. 6283 the sepals and petals were white, the lip yellow.

Description from herbarium.

Liparis L. C. Rich.

Sect. Platychilus.

Liparis Pullei J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 56; in N. Guinea XII (1915), 223, t. LXXIII, 128.

Dutch New-Guinea: In the northern part, (? Idenburg-river, 400 m., terrestrial in forest in moss on sandstone). W. FEUILLETAU DE BRUYN (n. ? 80, 1 September 1914; "flowers whitish green").

I suppose that the label of this plant has been changed.

Sect. Blepharoglossum.

Liparis confusa J. J. S. in Fl. Buit. VI (1905), Orch. 275; Atlas f. CCXI; etc.

var. **papuana** J. J. S. in N. Guinea XII (1915), 226; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 133, 5 October 1914; "flowers white, lip yellow"). Plain to the north of the Van Rees-mountains, in full sun. (W. FEUILLETAU DE BRUYN n. 227, 8 December 1914; "flowers whitish green, lip yellowish brown"). Meervlakte near Prauwen-bivouac, 60 m., epiphytical in forest. (H. J. LAM n. 846, August 1920; "flowers greenish white, lip yellowish green at the top, column greenish white"). Same locality, 90 m. (H. J. LAM n. 1125, September 1920; "flowers light greenish yellow, lip yellowish orange, column light green").

Podochilus Bl.

Podochilus scalpelliformis Bl. Rumphia IV (1848), 45, t. 194, f. 4; t. 200 C; etc.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, epiphytical in forest. (A. C. TH. THOMSEN n. 639, 3 April 1914; n. 826, 13 August 1914; H. J. LAM n. 621, July 1920). Near Prauwen-bivouac, 90 m., forest on hill. (H. J. LAM n. 1176, September 1920).

Podochilus imitans Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Sudsee (1905), 118; Fig. Atl. t. CXVIII, n. 441; etc.

Dutch New-Guinea: In the northern part near Prauwen-bivouac, 200 m., forest on hill. (H. J. LAM n. 1209, September 1920). Near Doorman-river, 200 m., forest on bank. (H. J. LAM n. 1272, September 1920).

Podochilus mamberamensis J. J. S. n. sp.

Tab. L, 26.

Caules elongati, repentes, ramosi, radicantes, filiformes, teretes, macerati c. 0.05 cm. diam., internodiis c. 0.15 cm. longis. Folia erecto-patentia, tortilia, linearia, acuta, costa media dorso prominente, crassiuscula, c. 0.55—0.65 cm. longa, 0.08—0.1 cm. lata; vaginae tubulosae. Inflorescentiae terminales et axillares, uniflorae, brevissimae, pedunculo brevi, c. 0.2 cm. longo, vaginulis c. 9 e basi tubulosa ovato-triangulis subulato-acutatis concavis erecto-patentibus imbricatis ad c. 0.24 cm. longis inferioribus minoribus donato. Flos parvus. Sepalum dorsale lateralibus basi breviter adnatum, ovato-triangulum, marginibus apice incurvulis, acutum, concavum, 1-nervium, c. 0.2 cm. longum, 0.13 cm. latum. Sepala lateralia lacinia late oblique oblonga falcata concava ad pedem gynostemii decurrentia, margine antico basi breviter connata, mentum reversum incurvum breviusculum saccatum obtusum lobulatum formantia, oblique triangula, apice marginibus incurvulis, acuta, nervo 1 dorso prominulo, usque ad apicem ovarii c. 0.18 cm., tota 0.325 cm. longa, basi 0.22 cm. metientia, parte libera 0.14—0.15 cm. lata. Petala oblique oblonga, vix falcatula, obtusa, basi angustata, inferne concava, basi excepta minute erosula, 1-nervia, c. 0.16 cm. longa, 0.06 cm. lata. Labellum oblongum, apice late rotundatum leviter retusum, dimidio superiore undulatum erosulumque, basi (versus locum insertionis) cuneato-angustatum, deinde in appendicem reversam obverse aequilateraliter trapeziformem truncatam enerviam bene 0.05 cm. longam 0.075 cm. latam productum, 3-nervium, totum 0.275 cm. longum, bene 0.1 cm., basi 0.05 cm. latum. Gynostemium c. 0.13 cm. longum, clinandrio elongato concavo. Anthera cucullata, basi biloba, apice altius anguste acute triangulo-bidentata, connectivo leviter incrassato, fere 0.1 cm. longa. Rostellum porrectum, in lacinias 2 subulatas sinu rotundato sejunctas partitum. Stigma margine inferiore prominens. Pes gynostemii tota longitudine sepalis lateralibus adnatus, reversus, cum ovario angulum acutum faciens, superne $^1/_3$ longitudinis hamato-incurvus, linearis, inexplanatus bene 0.1 cm. longus. Ovarium pedicellatum 6-sulcatum, c. 0.2 cm. longum (fecundatum?).

Dutch New-Guinea: In the northern part, Mamberamo near Prauwen-bivouac, 60 m.. epiphytical in forest on hill. (H. J. LAM n. 869, 21 August 1920; "flower white or somewhat greenish").

A distinct species in the form of the lip resembling *P. Hellwigii* Schltr. but with very short one-flowered inflorescences, the lip undulate and erose in the upper half and a bifid anther. As only herbarium was collected the description especially of the columh wants revision.

Appendicula Bl.

Sect. Chilopogon.

Appendicula disticha Ridl. in Journ. Bot. XXIV (1886), 354, t. 270; J. J. S. in N. Guinea XII (1916), 453, t. CLXXVI, 328. — *Podochilus distichus* Schltr. in Mém. Herb. Boiss. n. 21 (1900), 57. — *Chilopogon distichum* Schltr. Orch. D. N. Guinea (1912), 333; Fig. Atl. t. CXX, n. 450.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN, liv. pl. cult. in Hort. Bog. sub. n. 41).

Appendicula oxysepala J. J. S. in N. Guinea VIII (1909), 114, t. XXXVIII, 128. — ? *Chilopogon bracteatum* Schltr. var. *warianum* Schltr. Orch. D. N. Guinea (1912), 334; Fig. Atl. t. CXX, n. 453.

Dutch New-Guinea: In the northern part, to the west of Doorman-river, 300 m., epiphytical in forest. (H. J. LAM n. 1317, September 1920).

Sect. Eu-Appendicula.

Appendicula reflexa Bl. Bijdr. (1825), 301; etc.

var. **neo-pommeranica** Schltr. Orch. D. N. Guinea (1912), 338; etc.

Dutch New-Guinea: In the northern part, Meervlakte near Prauwen-bivouac, 60—90 m., epiphytical in forest. (H. J. LAM nrs. 896, 1000, 1033, 1097, August—September 1920).

Appendicula Gjellerupii J. J. S. nom. nov. — *A. cariniferi* J. J. S. (non Schltr.) in Fedde Rep. XII (1913), 406; in N. Guinea XII (1916), 449, t. CLXXIV, 325.

Dutch New-Guinea: In the northern part. (W. FEUILLETAU DE BRUYN n. 85, without date).

Appendicula patentissima J. J. S. n. sp.

Tab. L, 27.

Caules elongati, pars adest 34 cm. longa, internodiis c. 1.1—1.5 cm. longis. Folia patentia, lanceolata-linearia, apice breviter oblique obtuse bilobula cum mucrone paulo longiore subulato interposito, basi breviter angustata canaliculataque, sicco papyracea, ad c. 5.5 cm. longa, 0.75 cm. lata; vaginae tubulosae, internodia superantes, apice truncatae et antice altius excisae. Inflorescentiae axillares, 2 vaginas perforantes, patentissimae, arcuatae, foliis multo breviores, dense c. 8-florae, pedunculo tereti, c. 0.75 cm. longo, basi nonnullis vaginulis donato, rachide angulata, c. 0.8 cm. longa. Bracteae quaquaversae, reflexae, superne incurvae, ovato-triangulae, acutae, concavae, 3-nerviae, c. 0.375 cm. longae, 0.23 cm. latae, superiores minores. Flores parvi, c. 0.55 cm. longi. Sepalum dorsale erectum, orbiculari-ovatum, apice triangulo-contractum, basi latum, concavum, 3-nervium, c. 0.34 cm. longum, 0.3 cm. latum. Sepala lateralia lacinia lata concava ad pedem gynostemii decurrentia, mentum latum paulo a dorso compressum apice late rotundato-truncatum ovario subparallelum c. 0.26 cm. longum 0.225 cm. latum formantia, margine antico basi breviter connata, oblique triangula, obtusa, 3-nervia, c. 0.325 cm., margine antico 0.5 cm. longa, basi fere 0.4 cm. lata. Petala lata, oblique obovato-quinquangularia, margine postico valde rotundata, obtusa, basi lata, 3-nervia, bene 0.25 cm. longa, 0.23 lata. Labellum simplex, erectum, apice recurvum, ambitu oblongum, $^1/_3$ inferiore tenue et utrinque inflato-concavum, 3-nervium, nervis exterioribus basi furcatis, callo conspicuo obtuso in flexu, callo parvo infra apicem, appendice anguste oblonga truncata canaliculata carnosa basin labelli haud attingente basin versus paulo dilatata et in labelli partem medianam carnosulam exeunte, explanatum oblongum, apice rotundatum, $^2/_5$ partibus inferioribus dilatatum et basi rotundata apici pedi gynostemii adnatum, c. 0.475 cm. longum, basi fere 0.3 cm., superne 0.23 cm. latum. Gynostemium breve, cum ovario angulum obtusum faciens, dorso convexum, absque anthera fere 0.2 cm. longum, clinandrio alte excavato, margine serrulato, auriculis triangulis acutis. Anthera cucullata, cordata, apice producta et breviter obtuse bidentata, connectivo basi incrassato apicem versus carinato-decurrente et in dentem tertium aequilongum acutum terminante, fere 0.15 cm. longa. Rostellum porrectum, triangulum, acute bidentatum. Stigma semilunatum. Pes gynostemii ovario parallelus, superne incurvulus, oblongus, convexus, cum canalicula longitudinali apicem versus dilatata, c. 0.275 cm. longus. Ovarium crassiusculum, 6-sulcatum, bene 0.3 cm. longum.

Schouten-Islands: Biak. Wari (?). (W. FEUILLETAU DE BRUYN n. 468 (?), 4 September 1915 (?)).

In the form of the anther this species agrees with *A. Gjellerupii* J. J. S. It differs in the recurved inflorescences, longer bracts, broader sepals and petals, the lip being much broader at the base and provided with u much narrower appendage.

Description from poor dried material, the label of which has probably been changed.

Sect. Chaunodesme.

Appendicula Chalmersiana F. v. Muell. in Wing's South. Sc. Rec. I (n. s.) 1885; etc.

Dutch New-Guinea: In the northern part, Idenburg-river, 75 m., forest on hill. (W. FEUILLETAU DE BRUYN n. 39, 10 June 1914). Mamberamo. (W. FEUILLETAU DE BRUYN n. 155, 19 September 1914). Near Doorman-river, 200 m., epiphytical in forest on bank. (H. J. LAM n. 1391, September 1920.

Agrostophyllum Bl.

Sect. Dolichodesme.

Agrostophyllum mucronatum J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 2; in N. Guinea VIII (1909), 40, t. XIV, 44; etc.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26 m., forest. (A. C. TH. THOMSEN, n. 626, 1 April 1914; n. 879, 22 September 1914).

Agrostophyllum lamellatum J. J. S. in Bull. Dép. Agric. Ind. néerl. XXXIX (1910); in N. Guinea VIII (1911), 534, t. LXXX B.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1500 m., epiphytical in moss-grown forest. (H. J. LAM n. 1831, 31 October 1920).

Sect. Eu-Agrostophyllum.

Agrostophyllum uniflorum Schltr. in Schum. et Laut. Fl. D. Schutzgeb. Südsee (1905), 129; etc.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1450 m., slope in moss-grown forest, epiphytical in moss-cushions. (H. J. LAM n. 1908, November 1920).

Agrostophyllum fibrosum J. J. S. n. sp.

Tab. LI, 28.

Caules approximati, simplices, c. 10—27.5 cm. longi, foliati, internodiis c. 0.35—0.6 cm. longis. Folia parva, patentia, lanceolata, apicem versus sensim angustata, obtusa, breviter bidentata, dentibus triangulis falcato-incurvisque cum mucrone breviore interposito, basi semitorta semiamplexicaulia, margine superne etiam in dentibus lacinulato-erosa, costa media supra vix sulcata subtus vix prominula, c. 1.6—2.75 cm. longa, 0.4—0.6 cm. lata; vaginae tubulosae, internodia superantes, sectione transversa ellipticae, antice membranaceo-marginatae et plus minusve rumpentes, apice utrinque dente falcato instructae, c. 0.3—0.4 cm. latae. Inflorescentia terminalis, capitata, pauciflora, vaginulis mox in fibras ad c. 2 cm. longas solutis cinctae, spicis partialibus brevissimis, 1-floris, cum flore c. 1.85 cm. longis, pedunculis c. 0.2 cm. longis vaginulis c. 6; alternatim bifariis arcte imbricantibus tubulosis membranaceis sub florescentia plus minusve in fibras solutis furfuraceo-maculatis superioribus accrescentibus acutisque ad c. 1.1 cm. longis donato. Bractea vaginulis similis sed major, e basi tubulosa conspicue late ovato-dilatata, secta explanataque ambitu late rhombea, e basi late cuneata late ovata, superne furfuraceo-

maculata, c. 1 cm. longa, 0.95 cm. lata. Flos mediocris, basi ovarioque bractea vaginulisque inclusis. Sepalum dorsale late ovatum, obtusum, breviter apiculato-acuminatum, concavum, 3-nervium, c. 0.65 cm. longum, 0.5 cm. latum. Sepala lateralia marginibus proximis c. $^1/_3$ longitudinis subsaccato-connata, oblique ovata, falcata, acuta, subulato-apiculata, concava, 3-nervia, dorso ad apicem parce furfuraceo-maculata, c. 0.675—0.7 cm., margine antico 0.9 cm. longa, 0.5 cm. lata. Petala oblique oblongo-ovata, obtusa, basi obtusa brevissime contracta, basi excepta minute undulata, 3-nervia, bene 0.5 cm. longa, 0.3 cm. lata. Labellum porrectum, basi breviter saccatum, subtus longitudinaliter sulcatum, c. 0.975 cm., explanatum bene 1 cm. longum; saccus reversus, rotundatus, intus extusque valde longitudinaliter 4-costatus, c. 0.1 cm. longus; lobi laterales brevissimi, subnulli, vix rotundati, lamella transversa alta oblongo-quadrangula truncata macerata apice recurva papilloso-velutina conjuncti; lobus intermedius conspicuus, porrectus, concavus, e basi breviter unguiculato-contracta intus incrassationibus 2 longitudinalibus parallelis approximatis convexis breviter papillosis ornata late transverse rhombeus, utrinque rotundatus, apice breviter obtuse bilobulus, ungue excepto crenulatus, c. 0.65 cm. longus, 0.9 cm., ungue 0.3 cm. latus. Gynostemium cum ovario angulum obtusum faciens, breve, crassum, apice incurvulo latissimo breviter obtuse 3-lobulo, appendice conspicua crasse carnosa deflexa supra basin dilatatam constricta deinde transverse ovali supra vix concava dorso convexa subtus infra stigma, incrassatione valida transversa a latere visa rotundato-triangula antice praesertim inferne longitudinaliter late canaliculata in basi et in pede gynostemii, dente patentissimo leviter decurvo breviter conico carnoso utrinque in medio gynostemii, ex apice ovarii usque ad apicem rostelli c. 0.37 cm., ex apice gynostemii usque ad apicem pedis brevissimi 0.52 cm. metiens, clinandrio alte excavato triangulo basi costula longitudinali instructo. Anthera cucullata, supra visa triangula, apice obtusa, breviter obtuse trilobulata, basi alta subtruncata, c. 0.22 cm. lata. Pollinia 8, oblique clavata, basi acutissima. Rostellum porrectum, bipartitum, laciniis verticalibus subulatis. Stigma alte excavatum, transverse quinquangulare, fere aequilateraliter trapeziforme. Ovarium 6-sulcatum, c. 0.7 cm. longum. Capsula in valvas 6 subaequilatas basi apiceque cohaerentes dehiscens.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, east slope, 1420 m., low moss-grown Vaccinium-forest, epiphytical. (H. J. LAM n. 1434, 1 October 1920; "leaves dark green above, light green beneath, sheaths yellowish green; flowers white with a yellow blotch near base of lip"). Ridge to Doorman-bivouac, 1420 m., nearly flat swampy moss-grown forest, epiphytical. (H. J. LAM n. 1530, 5 October 1920).

Allied to *A. fragrans* Schltr., *A. verruciferum* Schltr., and *A. appendiculoides* Schltr. but from all differing in the bracts of the inflorescence being dissolved in fibres already in an early state. It seems to be nearest to *A. appendiculoides* Schltr. but the flowers are much larger with a different lip and column.

Description from herbarium only.

Sect. Appendiculopsis.

Agrostophyllum costatum J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 1; in N. Guinea VIII (1909), t. XIII, 43; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN, without number, 8 April 1914).

Aglossorhyncha Schltr.

Aglossorhyncha biflora J. J. S. in Bull. Dép. Agr. Ind. néerl. XXXIX (1910), 1; in N. Guinea VIII (1911), 542, t. LXXXV; etc.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2000 m., moss-grown forest. (H. J. LAM n. 1819, 31 September 1920).

Aglossorhyncha galanthiflora J. J. S. n. sp.

Tab. LI, 29.

Caulis basi radicans, ramosus, teres, superne leviter compressus, c. 30 cm. longus, internodiis ad c. 2.2 cm. longis, superioribus brevioribus. Folia satis patentissima, linearia, parte apicali c. 0.2—1.8 cm. longa leviter contracta, apice altius plus minusve oblique obtuse biloba, basi breviter angustata, vix irregulariter marginata, nervis praesertim costa media sicco subtus prominentibus, sicco rigide coriaceo-papyracea, c. 3—6.25 cm. longa, 0.35—0.56 cm. lata; vaginae internodia paululum superantes, tubulosae, sectione transversa ellipticae, dorso carinatae, sicco prominenter nervosae, apice lamina opposito dente brevissimo lato instructae. Inflorescentia terminalis, nutans, 2-flora. Sepalum dorsale subovato-lanceolatum, apicem versus sensim angustatum, apice canaliculatum, anguste obtusum, subulato-apiculatum, 3-nervium, costa media dorso ad apicem incrassata, c. 1.55 cm. longum, 0.43 cm. latum. Sepala lateralia libera, angulum acutum facientia, oblique ovato-lanceolata, apicem versus sensim angustata, apice canaliculata, acuta, subulato-apiculata, 3-nervia, nervis exterioribus ramosis, costa media dorso prominente, c. 1.57 cm. longa, 0.5 cm. lata. Petala suboblique ovato-lanceolata, sensim angustata, acuta, conico-apiculata, 3-nervia, c. 1.55 cm. longa, 0.45 cm. lata. Labellum cum ovario angulum obtusum faciens, valde concavum, cymbiforme, marginibus incurvis superne incrassatis, dimidio inferiore circiter margine ultimo angusto recurvulo gynostemio adpressum, apice in rostrum lateraliter compresso-conicum falcatulo-incurvulum anguste obtusum productum, subtus valde convexum cum sulco longitudinali, c. 9-nervium, costa media superne intus carinata, c. 1.25 cm. longum, explanatum ovatum, carnoso-acuminatum, c. 1.3 cm. longum, explanatum ovatum, carnoso-acuminatum, c. 1.3 cm. longum, fere 0.9 cm. latum. Gynostemium supra basin obtusangule incurvum, cum ovario angulum obtusum faciens, ceterum rectum, clavatum, dorso convexum, c. 0.85 cm. longum, clinandrio alte excavato, transverso, margine latius alato, quadrilobulato, lobulis apicalibus oblique quadrangulis concavis serrulatis, lobulis lateralibus in utraque stigmatis parte triangulis margine antico 2-lobulatis denticulatisque. Anthera sub ala abscondita, cucullata, quadrangula, basi contracta, apice breviter rotundato-bilobulata, connectivo lateraliter compresso-conico, c. 0.14 cm. lata. Pollinia 4, oblique ovalia, valde compressa, tenuia, extus leviter convexa, intus subplana, c. 0.075 cm. longa. Stigma obverse rotundato-triangulum, margine elevato superne incurvo. Ovarium 3-sulcatum, furfuraceo-puncticulatum, c. 0.65 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, northern slope, 1420 m., epiphytical. (H. J. LAM n. 1497, 4 October 1920; "roots brownish white, stem brownish green, leaves rather dark green, with the sheaths brownish green; sepals and petals very light greenish white, transparent, lip light green, greenish white below the apex; column light green, the apex greenish white; ovary greenish white; the geminate beautiful flowers recall to mind more or less those of *Galanthus*").

This is the second species of *Aglossorhyncha* with geminate flowers. In this genus especially the vegetative parts present very good characters for distinguishing the species.

Description from a single dried specimen and an inflorescence preserved in alcohol.

Aglossorhyncha peculiaris J. J. S. n. sp.

Tab. LII, 30.

Caulis elongatus, ramosus, inferne radicans et subteres, superne compressus, sectione transversa ellipticus, pars adest c. 28 cm. longus, ad 0.23 cm. latus, internodiis ad c. 1.3 cm. longis, superioribus decrescentibus. Folia alternatim bifaria, patentia, vix recurvula, ligulato-lanceolata, apicem versus angustata, apice abrupte dilatata et fere aequaliter rotundato-biloba, lobis suborbicularibus, emucronata, basi cuneata brevissime contracta cauli adpressa, supra obtusangule canaliculata cum lateribus leviter convexis rugosisque, firmiter coriacea, c. 2.2—3 cm. longa, 0.7—0.65 cm. lata; vaginae tubulosae, compressae, apice truncatae, dorso obtuse carinatae, longitudinaliter costulatae et transverse rugosae, internodia superantes, 0.25—0.275 cm. latae. Inflorescentia terminalis, 1—2-flora. Bractea inferior erecta, conduplicato-spathulata, apice rotundata, inferne prominenter nervosa, c. 0.65—0.9 cm. longa; bractea superior minor, tenuior, minus spathulata, infra apicem interdum subconstricta. Flores nutantes. Sepalum dorsale lanceolatum, obtusum, breviter obtuse apiculatum, 3-nervium, nervis exterioribus ramosis, c. 1.1 cm. longum, 0.33 cm. latum. Sepala lateralia libera, oblique lanceolata, in apiculum lateraliter compressum obtusum producta, 3-nervia, nervis exterioribus ramosis, c. 1.1 cm. longa, 0.4 cm. lata. Petala oblique lanceolata, subfalcatula, obtusa, abrupte brevissime obtuse apiculata vel bidentata, circiter $^1/_4$ superiore minute erosula, 3-nervia, c. 1.2 cm. longa, 0.325 cm. lata. Labellum cum ovario angulum obtusum fere rectum faciens, cymbiforme, $^2/_3$ partibus inferioribus marginibus gynostemio adpressum, ceterum marginibus incurvis incrassatisque, conico-apiculatum et intus calliferum, subtus longitudinaliter sulcatum, 7-nervium, nervis saltem 3 medianis intus prope apicem alato-elevatis, carnosulum, gynostemium bene superans, explanatum late ovale, basi truncata et marginibus superne incurvis plus minusve quinquangulare, conico-apiculatum, c. 0.95 cm. longum, 0.63 cm. latum. Gynostemium gracile, supra basin obtusangule incurvum, clavatum, c. 0.775 cm. longum, apice 0.23 cm. latum, clinandrio alte excavato, alato, quadrilobulato, lobulis apicalibus breviter lateque quadrangulis lacinulatis concavis, lobulis lateralibus triangulis 3-dentatis, cum dente brevi in sinibus inter lobulos laterales et apicales. Anthera magnam partem in clinandrium immersa, plane cucullata, ambitu suborbicularis, basi truncata, apice rotundato-bilobula, connectivo leviter incrassato, c. 0.15 cm. lata. Pollinia 4, a dorso compressa, extus convexa, intus concava, in corpuscula 2 pyriformia unita, c. 0.08 cm. longa. Rostellum latum, truncatum. Stigma prominens, conspicuum, semiovale, margine incurvulum. Ovarium curvulum, 6-sulcatum, furfuraceo-punctatum, c. 0.65 cm. longum.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN, July—August 1914; "flowers white, lip light green").

The peculiar leaves distinguish this at once from the other species described.

Description from materials preserved in alcohol.

Glomera Bl.

Sect. Euglomera.

Glomera palustris J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 3; in N. Guinea XII (1913), 19, t. IV, 10.

var. **subintegra** J. J. S. n. var.

Differt a forma typica sacco labelli magis rotundato, gynostemii clinandrio minus alte inciso.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 3100 m., open ridge with a few trees, epiphytical. (H. J. LAM n. 1829, 30 October 1920; "leaves green, darker beneath, sheaths greenish yellow, flowers white, the lip yellow-orange lighter at base, ovary and bract greenish white"). Same locality, 2540 m., epiphytical in moss-grown forest. (H. J. LAM n. 1964, 11 November 1920; "stem dark brown, roots brown, leaves dark green above a little lighter beneath, sheats green, soon turning brown, sepals and petals white, lip light yellow with the apex yellow-orange, column white with a dark brown top, ovary white").

Glomera subracemosa J. J. S. in Bull. Dép. Agr. Ind. néerl. XXXIX (1910), 15; in N. Guinea VIII (1911), 535, t. LXXXI A; etc.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 21, July—August 1914; "flowers white, lip with a red tip, anther blackish").

Glomera Dekockii J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 2; in Nova Guinea XII (1913), 20, t. IV, 11 (excl. N. G. XII, 3 (1915), 242).

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 25, July—August 1914). Foot of Doorman-top, 3250 m., terrestrial in open nearly flat dry country. (H. J. LAM n. 1614, 17 October 1920).

These two numbers belong, I think, to *G. Dekockii* J. J. S. More material especially from the original locality is wanted to decise if they should be kept apart as varieties.

Glomera hubrechtiana J. J. S. n. sp. — *G. Dekockii* J. J. S. (pp.) in Nova Guinea XII, (1915), 242.

Tab. LI, 31.

Caules elongati, valde ramosi, partes adsunt ad c. 45 cm. longae. Folia lanceolato-linearia, valde oblique obtusa vix bilobula, basi brevissime contracta, irregulariter crenulata, supra concava rugosa, dorso convexa, carnosa, ad c. 3.7 cm. longa, 0.525 cm. lata; vaginae tubulosae, internodia superantes, sectione transversa ellipticae, apice truncatae, valde transverse verrucoso-rugosae, c. 0.3 cm. latae. Capitula terminalia, nutantia, c. 5-flora. Bractea infima semi-elliptica, basi lata, apice conduplicato-acuminata, concava, dorso furfuraceo-puncticulata, c. 0.9 cm. longa et lata, superiores decrescentes. Flores mediocres, c. 0.925 cm. longa, sepalis petalisque conniventibus apice recurvis. Sepalum dorsale lateralibus longitudine c. 0.1 cm. adnatum, ovatum, breviter acuminatum, obtusum, c. 0.625 cm. longum, 0.4 cm. latum. Sepala lateralia marginibus proximis alte connata, mentum saccatum calcar labelli includens latum rotundatum cum ovario angulum acutum faciens dorso late canaliculatum eo dorso ad apicem leviter convexo-trilobulum c. 0.35 cm. longum formantia, late oblique ovato-triangula, acuta vel leviter acuminata, apiculata, concava, 5-nervia, explanata margine postico bene 0.6 cm., usque ad

apicem sacci bene 0.7 cm. longa, parte libera c. 0.3 cm. longa 0.4 cm. lata, una 0.9 cm. lata. Petala oblique ovalia, acutata, anguste obtusa, margine antico obtusangula, concava, 3-nervia, fere 0.6 cm. longa, 0.34—0.38 cm. lata. Labellum basi gynostemio breviter vix 0.1 cm. et pedi gynostemii adnatum, usque ad apicem ovarii c. 0.4 cm., cum calcari c. 0.525 cm. longum; lamina porrecta, gynostemium paulum superans, oblongo-quinquangularis, apice obtusangula, carnosa, inferne longitudinaliter obtusangule canaliculata cum lateribus convexis, superne costula longitudinali convexa inconspicua notata papillosa et atra, 5-nervia, basi in costam transversam conspicuam recurvulam producta, cum costula c. 0.25 cm. longa, 0.18 cm. lata; calcar deorsum spectans, cum ovario angulum acutum faciens, a latere compressum, ovale, oblique rotundatum, usque ad apicem ovarii c. 0.4 cm. longum, 0.27 cm. altum. Gynostemium curvulum, dorso convexum, c. 0.3 cm. longum, clinandrio alte excavato, triangulo, apice triangulo sinibus late rotundatis repandulis ad dentatis ab auriculis oblique triangulis subquadrangulis anguste obtusis rostello fere aequilongis separato, pede cum ovario angulum acutum faciente c. 0.2 cm. longo. Anthera cucullata, orbicularis, apice hyalino-marginato rotundata, basi retusa, connectivo basi obtuse conico-incrassato, c. 0.17 cm. lata. Pollinia 4, valde a dorso compressa, oblique obovata, extus convexa, intus longitudinaliter sulcata, c. 0.07 cm. longa. Rostellum auriculas vix superans, latum, truncatum. Stigma prominens, semiorbiculare, margine inferiore bene elevato rotundatum. Ovarium subfusiforme, 3-sulcatum, c. 0,5 cm. longum.

Dutch New-Guinea: Hubrecht-valley, 3000 m., forest, swampy. (A. PULLE n. 2456, leg. G. M. VERSTEEG, 9 February 1913; "length 1.5 m., flowers white, ovary green").

The plant is distinct from *G. Dekockii* J. J. S., with which I united it formerly. It is a more robust plant with conspicuously larger flowers, an orbicular anther not retuse at the apex, whereas also the other parts of the flower show differences.

Description from herbarium.

Glomera manicata J. J. S. in Bull. Dép. Agr. Ind. néerl. XXXIX (1910), 15; in N. Guinea VIII (1911), 536, t. LXXXI B; etc.

Dutch New-Guinea: In the northern part, foot of Doorman-top on a small hill, 3260 m., between high ferns and shrubs. (H. J. LAM n. 1706, October 1920; "stem brown or brownish green, leaves shiny green with a yellowish green margin above, dull green beneath, fringes of the sheaths white, flower white with the top of the lip blood-red, ovary greenish white").

Glomera transitoria J. J. S. in Fedde Rep. XI (1913), 558; in N. Guinea XII (1915), 244, t. LXXXV, 148.

Dutch New-Guinea: In the northern part, c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN nrs. 22, 23, 24, July—August 1914).

Sect. Glossorhyncha.

Glomera uniflora J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 25; in N. Guinea VIII (1909), 43, t. XV, 49. — *Glossorhyncha uniflora* Schltr. Orch. D. N. Guinea (1912), 295.

Dutch New-Guinea: In the northern part, Mamberamo, Casuaris-hill near Prauwen-bivouac, 200 m., epiphytical in cut open forest. (H. J. LAM n. 1073, 6 September 1920).

Glomera geelvinkensis J. J. S. in Mededeel. Herb. Leiden n. 23 (1915), 6; in N. Guinea XII (1915), 246, t. LXXXVI, 150.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 29, July—August 1914; "white, lip light brown").

Glomera rhombea J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 5; in N. Guinea XII (1913), 22, t. V, 14. — *Glossorhyncha rhombea* Schltr. Orch. D. N. Guinea (1912), 295.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1450 m., epiphytical. (H J. LAM n. 1902, 5 November 1920).

Glomera Pullei J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 58; in Nova Guinea XIII (1915), 247, t. LXXXVII, 52.

Dutch New-Guinea: In the northern part, Doorman-top, 2900—3300 m., terrestrial between roots and moss. (H. J. LAM nrs. 1600, 1670, 1777a (mixed with n. 1777), 1806a (mixed with n. 1806), 1821, October 1920).

Glomera minutigibba J. J. S. n. sp.

Tab. LII, 32.

Caulis elongatus, ramosus, tenuis, subteres, inferne radicans, pars adest 34 cm. longa, 0.1 cm. diam., internodiis ad c. 0.85 cm. longis. Folia erecto-patentia, lanceolato-linearia, infra apicem paululum constricta, apice obliqua, latere longissimo obtuso, latere brevissimo obsolete dentiformi, basi breviter petiolato-contracta, supra obtusangule canaliculata, subtus convexa, carnosa, c. 1.5—2.1 cm. longa, c. 0.2 cm. lata; vaginae tubulosae, internodia superantes, sectione transversa ellipticae, superne prominule nervosae et transverse verruculoso-rugulosae, apice truncato fimbriis adpressis longis crispulis ciliatae, c. 0.125 cm. latae. Inflorescentia 1-flora, vaginula tubulosa, ultra medium fissa, obtusa, apiculata, dorso ad apicem carinata, nervis extus prominulis, furfuraceo-punctata, membranacea, c. 0.65 cm. longa. Bractea vaginula similis sed tenuior, magis furfuracea, c. 0.56 cm. longa. Sepalum dorsale lanceolatum, obtusum, apiculatum, 3-nervium, c. 0.8 cm. longum, 0.2 cm. latum. Sepala lateralia basi brevissime connata, oblique lanceolata, subfalcatula, obtusa, subulato-apiculata, margine antico basi breviter rotundato-dilatata saccum labelli aequantia, 3-nervia, c. 0.7 cm. longa, supra basin 0.2 cm. lata. Petala oblique spathulata, 3-nervia, c. 0.77 cm. longa, ungue lineari, 0.33 cm. longo, 0.1 cm. lato, lamina late elliptica, obtusa, c. 0.47 cm. longa, 0.325 cm. lata. Labellum breviter calcaratum, basi gynostemio adnatum, concavum, subtrilobum, recurvum, c. 0.36 cm. longum, explanatum ambitu rhombeum, c. 0.45 cm. longum; lamina cum calcari angulum obtusum faciens, gynostemium bene superans, c. 0.325 cm. longa, explanata late triangula, apice inconspicue contracta, anguste obtusa, parte apicali conspicua brunnea (in spiritu vini), c. 0.33 cm., parte libera fere 0.3 cm. longa, 0.325 cm. lata, lobis lateralibus late rotundatis, lobo intermedio triangulo; calcar reversum, cum ovario angulum acutum faciens, apice recurvulum, antice convexum, dorso concavum, obtusum, c. 0.18 cm. longum, ovario multo brevius. Gynostemium dimidio inferiore labello adnatum, obtusangule curvatum, apice recurvum eo sigmoideum, dorso convexum, c. 0.2 cm. longum, clinandrio alte excavato triangulo, margine postico producto triangulo erosulo, auriculis triangulis. Anthera cucullata, basi truncata, ambitu orbiculari-ovata, apice in appendicem conspicuam obtusangule recurvulam late triangulam obtusam

productâ, thecis convexis canalicula separatis, connectivo altius sed angustissime gibboso postice canaliculato, bene 0.1 cm. lata. Pollinia 4, obovata, extus convexa, intus plana cum sulco longitudinali. Rostellum late truncatum. Stigma prominens, margine inferiore producto recurvo rotundato. Ovarium 3-sulcatum, glabrum, c. 0.53 cm. longum.

Dutch New-Guinea: In the northern part, ridge 70 km. north of Carstensz-mountains, bivouac C, 1800 m., on moss-grown branches. (L. A. C. M. DOORMAN n. 28, July—August 1914; "flowers white, lip with a black tip").

More or less in the way of *G. fimbriata* J. J. S. but with narrower leaves, appressed cilia, much smaller flowers, a more acute lip and different anther.

The material was not in very good condition, reason why my description may require revision in some points when better material will be available.

Description from a specimen with one flower preserved in alcohol.

Glomera pleiotricha J. J. S. n. sp.

Tab. LIII, 33.

Caulis ramosus, tenuis, pars adest c. 5.5 cm. longa, internodiis c. 2.1 cm. longis. Folia lineari-lanceolata, apicem versus sensim longe angustata, in c. 0.27—1.25 cm. infra apicem interdum unilateraliter abrupte paululum dilatata deinde iterum angustata, valde oblique anguste obtusa, basi breviter petiolato-contracta, supra in utraque parte canaliculae longitudinalis convexa et subrugulosa, subtus convexa et sparse impresse punctículata, carnosa, c. 1.4—3.9 cm. longa, 0.225—0.37 cm. lata; vaginae internodia superantes, tubulosae, compressae, sectione transversa ellipticae, ecarinatae, longitudinaliter prominule costulatae, superne praesertim antice leviter verruculosae, apice laminae opposito lobulo donatae, fimbriis numerosis adpressis pallidis ciliatae, ad c. 0.17 cm. latae. Flos mediocris, c. 1.2 cm. longus. Sepalum dorsale anguste oblongum, breviter acutum, breviter obtuse apiculatum, planum, 3-nervium, c. 1 cm. longum, 0.35 cm. latum. Sepala lateralia anguste oblonga, falcatula, obtusa, obtuse verruculoso-apiculata, margine antico basi in lobum brevem rotundatum concavum calcari adpressum et eum aequantem dilatata, brevissime connata, concava, 3-nervia, c. 0.9 cm., margine antico 0.95 cm. longa, 0.3 cm., ad lobum basilarem bene 0.4 cm. lata. Petala oblique spathulata, ex ungue oblongo sensim in laminam late ellipticam obtusam dilatata, concava, 3-nervia, bene 1 cm. longa, ungue c. 0.275 cm. longo, 0.17 cm. lato, lamina 0.725 cm. longa, bene 0.5 cm. lata. Labellum breviuscule calcaratum, totum c. 0.66 cm. longum; lamina gynostemium longe superans, porrecta, gynostemio basi breviter adnata, marginibus erectis valde concava, incrassata, c. 7-nervia, usque ad apicem ovarii fere 0.5 cm. longa, explanata ambitu quinquangulari-suborbicularis, apice obtuse triangulo-acuminata costula longitudinali convexa verruculosa instructa et macula atro-punctata ornata, c. 0.425 cm., parte libera 0.33 cm. longa, fere 0.4 cm. lata; calcar ovario arcte adpressum et bene brevius, conico-cylindricum, obtusissimum, dorso canaliculatum, c. 0.28 cm. longum. Gynostemium brevissimum, curvulum, apice recurvulum, dorso anguste convexum subcostatumque, c. 0.24 cm. longum, inferne labello adnatum, clinandrio alte excavato, triangulo, margine dorsali triangulo, dentato, auriculis dentiformibus. Ovarium 3-sulcatum, glabrum, c. 0.625 cm. longum.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN nrs. 26 and 27, July—August 1914; "white, lip white with a black apex").

Resembling *G. adenocarpa* (Schltr.) J. J. S. but with larger differently shaped leaves, broader petals, a less acuminate lip and a smooth ovary. From *G. acuminata* J. J. S. it differs in the lateral sepals connate only a short way, more spathulate petals and a less acuminate lip with the spur not retuse, and from *G. terrestris* J. J. S. in the narrower sepals, the lateral sepals not being enlarged towards the apex and equalling with their broadened bases the spur, and the spathulate petals.

Both numbers are represented only by a small branchlet preserved in alcohol.

Glomera acutipetala J. J. S. n. sp.

Tab. LIII, 34.

Caules inferne radicantes, elongati, ramosi, tenues, ultra 60 cm. longi, vix 0.1 cm. lati, internodiis usque 1.3 cm. longis. Folia erecto-patentia, linearia, apice oblique lineari-angustata, truncato-obtusa, basi cuneata petiolato-contracta, concava, subtus convexa, carnosa, ad c. 2—2.65 cm. longa, 0.175—0.275 cm. lata; vaginae tubulosae, internodia superantes, sectione transversa ellipticae, prominenter nervosae, prope apicem parcissime transverse verruculosae, lamina opposito dente conspicuo obtuso fimbriis adpressis flexuosis pallidis dense ciliato instructae, nitidae, ad c. 0.16 cm. latae. Inflorescentia terminalis, erecta, 1-flora, vaginula amplius tubulosa, usque ad medium fissa, dorso ad apicem carinata, abrupte conduplicato-apiculata, nervis prominulis, everruculosa, fere 1.1 cm. longa, bractea vaginula simili sed tenuiore et magis furfuracea, calcar ovariumque amplectente, c. 0.97 cm. longa. Flos mediocris. Sepalum dorsale lanceolatum, subacutum, apiculatum, 3-nervium, c. 1.1 cm. longum, 0.35 cm. latum. Sepala lateralia margine antico basi leviter rotundata brevissime connata et basi calcaris adpressa, oblique lanceolata, vix falcatula, apicem versus paululum angustata, breviter subacuta, apiculata, 3-nervia, fere 1.1 cm., margine antico 1.2 cm. longa, bene 0.3 cm. lata. Petala oblique rhombea, acutiuscula, basin versus angustata, 3-nervia, nervis exterioribus ramosis, c. 1.1 cm. longa, 0.46 cm. lata. Labellum breviuscule calcaratum, totum c. 0.8 cm. longum; lamina gynostemium longe superans, porrecta, basi gynostemio breviter adnata, marginibus lateralibus rotundatis erectis gynostemio adpressis valde cucullato-concava, haud abrupte incrassata, 5-nervia, c. 0.575 cm., parte libera 0.4 cm. longa, explanata e basi cuneata (parte columnae adnata) transverse ovalis, in lobum (lobum intermedium) triangulum acutum convexum papillosum 0.1 cm. longum 0.16 cm. latum producta, tota c. 0.5 cm., parte libera 0.4 cm. longa, 0.45 cm. lata; calcar ovario bene brevius, reversum, ovario adpressum, conicum, obtusum, maceratum vix retusum, dorso canaliculatum, c. 0.375 cm. longum. Gynostemium inferne labello adnatum, curvulum, dorso convexum, c. 0.26 cm. longum, clinandrio alte excavato triangulo apice obtuso margine denticulato, auriculis brevioribus, dentiformibus, acutis, dentibus ceteris poulo longioribus. Anthera cucullata, ambitu suborbicularis, apice angustato-producto valde recurvo rotundato spurie bilobula, basi bilobula, connectivo transverso paulum elevato rotundato, c. 0.1 cm. lata. Pollinia 4, a dorso compressa, oblique obovata, extus convexa, intus plana. Rostellum recurvum, semiorbiculare, obtuse bilobulum. Ovarium obtuse trigonum, 3-sulcatum, furfuraceo-punctatum, c. 0.7 cm. longum.

Dutch New-Guinea: Ir the northern part, foot of Doorman-top, 3200 m., screened ravine, terrestrial in moss-cushions. (H. J. Lam n. 1806, 29 October 1920; "leaves light green, oval in section, sheaths brownish yellow, bract yellow, flower pure white, lip with a dark brown apex").

Much resembling *G. pleiotricha* J. J. S. but the leaves tapering gradually, the sheaths less warty, petals acute, the tip of the spur not covered by the lateral sepals, the blade of the lip with a broader triangular apex.

Description from herbarium only.

Glomera adenandroides J. J. S. in Bull. Jard. Bot. Buit. 2e sér. VIII (1912), 12. — *Glossorhyncha adenandroides* Schltr. Orch. D. N. Guinea (1914), 294.

Tab. LIII, 35.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2000 m., epiphytical in moss-grown forest. (H. J. LAM n. 1903, 5 November 1920; "roots brown, leaves light green a little brownish, sheaths dark brown, flowers pure white, column yellow").

I have little doubt as to the correctness of my identification though the material at hand is very poor indeed.

Glomera subeciliata J. J. S. n. sp.

Tab. LIV, 36.

Caules elongati, valde ramosi, radicantes, flexuosi, compressi, internodiis ad c. 1.5—1.75 cm. longis, 0.2 cm. latis, superioribus minoribus. Folia erecto-patentia, ovato-lanceolata, apicem versus angustata, oblique obtusa vel subbilobula, basi cuneata in petiolum contracta, acute marginata, supra in utraque parte canaliculae longitudinalis convexa, dorso obtusangule convexa apice carinata, crasse carnosa, rigida, dorso sparse minute impresse furfuraceo-puncticulata, absque petiolo ad c. 2.2—2.5 cm. longa, 0.575 cm. lata, petiolo 0.15—0.3 cm. longo; vaginae internodia superantes, tubulosae, compressae, apice truncatae, eciliatae vel interdum fimbriis brevibus raris instructae, sparse furfuraceo-puncticulatae, apicem versus interdum parce verruculosae, ad c. 0.33 cm. latae. Inflorescentia nutans, 1-flora, vaginula tubulosa, acuta, apiculata, prominenter nervosa, apice carinata, furfuraceo-maculata, membranacea, c. 1.4 cm. longa. Bractea vaginula similis, exapiculata, c. 1.7 cm. longa, calcar ovariumque includens. Flos in sectione magnus, c. 2.6 cm. latus. Sepalum dorsale oblongo-ellipticum, obtusum, conico-apiculatum, 3-nervium, nervis exterioribus ramosis, c. 1.85 cm. longum, 0.73 cm. latum. Sepala lateralia oblique ovato-oblonga, falcatula, obtusa, subulato-apiculata, basi margine antico conspicue dilatata et in laminam subtriangulam obtuse bilobam concavam calcari adpressam c. 0.5 cm. longam connata, 3-nervia, c. 1.45 cm. longa, 0.575 cm. lata. Petala e basi breviter cuneato-unguiculata orbiculari-elliptica, obtusa, 3-nervia, nervis exterioribus ramosis, dorso longitudinaliter sulcata, cum ungue c. 0.36 cm. longo c. 1.77 cm. longa, 1.1 cm. lata. Labellum longe calcaratum, totum c. 1.8 cm. longum; lamina parva, carnosa, basi haud abrupte incrassata, valde cucullato-concava, marginibus lateralibus anguste recurvula, subtus longitudinaliter sulcata, inferne gynostemio adnata, usque ad apicem ovarii c. 0.45 cm., parte libera 0.23 cm. longa, tota explanata cuneata, parte libera transverse oblonga, utrinque rotundata, apice subtruncata medio in lobulum brevissimum obtusum valde concavum producta, apice macula minuta obverse triangula punctorum nigrescentium ornata, c. 0.5 cm., parte libera 0.2 cm. longa, 0.5 cm. lata; calcar ovario adpressum, lineare, rectum, vix a dorso compressum, dorso canaliculatum, apice bilobulum, c. 1.35 cm. longum. Gynostemium ultra medium labello adnatum, apice leviter incurvulum, sectione transversa triangulum, c. 0.325 cm. longum, clinandrio alte excavato, transverse

ovali, margine repandulo-dentato, apice obtusissimo, auriculis dentiformibus, margine superiore dente instructis. Anthera cucullata, antice visa thecis connectivoque satis humili lato obtusissimo trilobula, apice rotundato-triangulo-producta recurvataque, margine apicali incrassata, c. 0.14 cm. lata. Pollinia 4, non compressa, 2 obovata, 2 ovalia, extus convexa, intus plana cum excavatione ovali, c. 0.075 cm. longa. Rostellum auriculas vix superans, rotundatum, obtuse bilobulum. Stigma prominens, margine inferiore patentissimo incurvulo retuso. Ovarium 3-sulcatum, parce impresse minute furfuraceo-puncticulatum, c. 1.65 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2700 m., terrestrial in moss-cushions in moss-grown forest. (H. J. LAM n. 2825, 30 October 1920; "roots light brown, leaves green, beneath and petiole light green, sheaths rather darkbrown, flower snow-white except a small brown spot at the top of the lip, column yellow, ovary greenish yellow").

Near *G. adenandroides* (Schltr.) J. J. S. but the stems are much branched, manifestly compressed, the leaves ovate-lanceolate, fleshy, the sheaths whithout or nearly without cilia, the limb of lip cuneate when laid out, nearly truncate, 0.5 cm. broad and with a small dark spot at the apex, the anther with a strongly recurved apex.

Description from herbarium and material preserved in alcohol.

Sect. Giulianettia.

Glomera grandiflora J. J. S. in Bull. Dép. Agr. Ind. néerl. XXXIX (1910), 13; in N. Guinea VIII (1911), 541, t. LXXXIV A. — *Glossorhyncha grandiflora* Schltr. Orch. D. N. Guinea (1912), 293.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3260 m., open nearly flat ground, terrestrial between ferns. (H. J. LAM n. 1753, 25 October 1920; "stem brown-orange, leaves brown-orange above, dull green somewhat yellowish beneath, sepals and petals beautifully dark orange or dark salmon-coloured, lip a little lighter with a black apex, column pale orange").

The only flower at hand is somewhat smaller than those collected formerly. Better materials are desirable.

Glomera fruticula J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 5; in Nova Guinea XII (1913), 28, t. VII, 20. — *Glossorhyncha fruticula* Schltr. Orch. D. N. Guinea (1912), 293.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3250 m., open nearly flat dry country, erect. (H. J. LAM n. 1611, 17 October 1920; "leaves dark green, often suffused with orange, flower light orange"). As quoted, 3280 m., open sunny slope of ravine between ferns and grasses. (H. J. LAM n. 1737, 24 October 1920; "leaves shiny above, dull green beneath, often suffused with salmon-colour, flower dark salmon-coloured, lip with a black apex, pollinia yellow").

Though the flowers of n. 1611 are lighter in colour than those of the type I think it belongs here.

Mediocalcar J. J. S.

The classification of the species of this genus in sections according to their habit, as proposed by Dr. R. SCHLECHTER, is not wholly satisfactory as in several species one- and two-leaved pseudobulbs are produced on the same stock, viz. *M. alpinum* J. J. S., *M. bifalium*

J. J. S., *M. dependens* J. J. S., *M. crenulatum* J. J. S., *M. retusum* J. J. S. On the other hand *M. bulbophylloides* J. J. S., which according to the characteristics of the flowers belongs to SCHLECHTER's section *Microcalcar*, possesses one-leaved pseudobulbs.

I prefer to distinguish only 2 sections:

1. Sect. Eumediocalcar. Spur of lip large, nearly as long as the claw of the lip, or a little shorter or longer. Leaf solitary.

2. Sect. Brevicalcar. Spur of lip saccate, much shorter than the claw. Leaves 1—2, often on the same specimen.

The section *Eumediocalcar* comprises exactly the same species as Dr. SCHLECHTER ascribed to it, the section *Brevicalcar* all the other ones.

In both sections pseudobulbs with wholly rudimentary leaves are of no rare occurrence.

Sect. Brevicalcar.

Mediocalcar crenulatum J. J. S. n. sp.

Tab. LIV, 37.

Rhizoma elongatum, radicans, initio vaginis amplis tubulosis obtusis superioribus accrescentibus apicem versus carinatis apiculatisque ad c. 1.5—3 cm. longis tectum. Pseudobulbi c. 1—6 cm. distantes, basi tantum rhizomati adnati, adscendentes, carnosi, sicco c. 0.85—2.3 cm. longi, parte libera c. 0.6—1.75 longa, 1—2-folii. Folia oblongo-elliptica ad lanceolata, obtusa vel acutiuscula, breviter subaequaliter obtuse vel acutiuscule bidentata cum mucrone paulo longiore crasso saepe incurvulo interposito, basi angustata canaliculataque, superne irregulariter crenulata, costa media supra leviter canaliculata subtus carinata, sicco rigide coriacea, margine valde recurva, verruculoso-rugosa, sicco c. 2.85—7.6 cm. longa, 0.9—1.4 cm. lata, si 2 folia adsunt folium infimum maximum. Inflorescentiae plerumque 1, interdum (in n. 1642) 2, pedunculo c. 2.25—3.75 cm. longo. Bractea e basi brevissima subannulari in apiculum subulatum producta, ad c. 0.375 cm. longa. Flos mediocris, c. 1.35 cm. longus, basi 0.86 cm. altus. Sepala in urceolum obliquum subtus inferne ampliatum a latere compressum postice vix impressum apice 3-lobum connata, carnosula, omnia 5-nervia, nervis exterioribus sepali dorsalis cum nervo adjacente sepalorum lateralium basi unitis, explanata tota c. 1.9 cm., inter apices 0.65 cm. lata, Sepalum dorsale totum bene 1.2 cm. longum, parte libera recurvula, triangula, marginibus leviter curvata, obtusa, c. 0.46 longa, bene 0.3 cm. lata. Sepala lateralia basi antice oblique dilatata, tota c. 1.3 cm. longa, parte libera oblique triangula, anguste obtusa, obtuse apiculata, marginibus curvata, dorso medio bene longitudinaliter incrassata, c. 0.4 cm. longa et lata. Petala parallela, gynostemio adpressa, anguste lanceolata, ante medium leviter constricta, acuta, leviter concava, 3-nervia, fere 1.1 cm. longa, supra basin c. 0.2 cm., infra medium 0.15 cm., superne 0.25 cm. lata. Labellum spathulatum, basi pedi gynostemii adnatum, supra basin rectangule recurvum et parallelum gynostemio porrectum, concavum, gynostemium superans, paululum supra medium saccatum, 5-nervium, inexplanatum fere 1.1 cm. longum, lamina cum calcari c. 0.725 cm. longa, explanatum totum c. 1.3 cm. longum, ungue leviter concavo, oblongo cum marginibus subparallelis, basi in auriculas 2 deflexas cum ovario gynostemioque angulos rectangulos facientes subovales rotundatos concavos dorso convexos producto, cum auriculis bene 0.5 cm. longo, 0.27 cm. lato, lamina valde concava, explanata ovato-rhombea, breviter

anguste obtuse acuminata, utroque latere rotundata, c. 0.675 cm. longa, fere 0.6 cm. lata, sacco reverso, non compresso, vix conico, rotundato, pariete postico in fauce leviter transverse incrassato, ungue conspicue breviore. Gynostemium satis longum, subrectum, a dorso compressum, dorso convexum, subtus subplanum apicem versus leviter concavum, in utraque stigmatis parte leviter dilatatum, apice oblique truncatum, non excisum, leviter irregulariter marginatum, absque anthera c. 0.8 cm. longum, clinandrio excavato, auriculis incurvis rotundatis. Anthera cucullata, quinquangulari-cordata, apice angustata, obtusa, c. 0.17 cm. lata. Stigma majusculum, transversum. Pes gynostemii cum ovario gynostemioque angulos subrectos faciens, quadrangulus, fere 0.2 cm. longus. Ovarium pedicellatum teres, 6-sulcatum, impresse puncticulatum, c. 1.2 cm. longum.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3250 m., on a slope between shrubs and ferns, terrestrial. (H. J. LAM n. 1599, 17 October 1920; "creeping, pseudobulbs light yellowish green, leaves thick, green above, lighter beneath, bract light. green, peduncle and ovary dark red, sepals and petals brick-red with green tips, lip and column pale green"). Doorman-top, 3500 m., open slope, terrestrial. (H. J. LAM n. 1642, 18 October 1920; "flowers fiery red with yellowish green or light green tips, red-brown in throat, ovary dark red, peduncle red-brown"). Ridge to Doorman-top, 2700 m., moss-grown forest, terrestrial in moss-cushions. (H. J. LAM n. 1998, 14 November 1920; "roots light brown, leaves firm, green, petiole and pseudobulbs lighter, flowers orange red, the laciniae yellow, somewhat green at the tip, column light yellow").

In the shape of the flowers this is similar to *M. crassifolium* J. J. S. and *M. bulbophylloides* J. J. S. with which species it has also in common the column-foot standing in right angles to the ovary and column. In habit, however, it is very different, the leaves are crenulate, and the sac of the lip is longer.

From n. 1998, which was wholly preserved in alcohol, I add the following notes: Rhizome more than 0.3 cm. thick; pseudobulbs obliquely ovate oblong, 1.5 cm. long, 0.65 cm. diam.; leaves fleshy, channelled above keeled beneath, 8.25—9.5 cm. long, 1.4—1.25 cm. broad, warty above.

From n. 1642 I gather that the fruiting peduncle seems to lengthen and grow stouter; it has a length of 6.25 cm. The fruit (not wholly ripe) which possesses 6 broad ribs, is 1.8 cm. long and crowned by the withered flower; the pedicel measures 0.8 cm.

Mediocalcar retusum J. J. S. n. sp.

Tab. LIV, 38.

Rhizoma elongatum, ramosum, ad c. 55 cm. longum, initio vaginis imbricantibus tectum, radicibus tenuibus. Pseudobulbi apice excepto rhizomati adnati, parte libera ad c. 2.4—3 cm. distantes, teretes, apice libero paulo incrassato, plus minusve adscendente, subtus concavo, obtuso ad c. 0.8 cm. longo, omnino etiam in spiritu vini minute rugulosi, toti ad c. 1—2 cm. longi, 0.27—0.325 cm. diam., 1—2-folii vel interdum foliis destituti. Folia lineari-lanceolata, apice breviter obtuse bidentata cum mucrone aequilongo vel longiore crasso acuto vel obtuso saepe incurvo interposito, basi petiolato-angustata, supra in utraque parte canaliculae longitudinalis convexa, subtus convexa, carnosa, c. 4—5.5 cm. longa, 0.375—0.6 cm. lata (in spiritu vini); si 2 folia adsunt folium infimum maximum. Inflorescentia solitaria, 1-flora, pedunculo erecto, c. 2 cm. longo. Bractea parva, adpressa, apiculata, c. 0.1 cm. longa. Flos mediocris,

totus c. 1.3 cm. longus, inferne 0.77 cm. altus. Sepala in urceolum valde obliquum subtus inferne ventricosum postice impressione obtusissime bilobum apice longitudine c. 0.4 cm. contractum 3-lobum connata, explanata tota c. 1.8 cm., ad basin loborum 1.1 cm. lata. Sepalum dorsale 3-nervium, totum bene 1 cm. longum, parte libera ovato-triangula, obtusa, breviter obtuse apiculata, c. 0.43 cm. longa, 0.3 cm. lata. Sepala lateralia basi antice oblique dilatata, concava, 3-nervia, tota c. 1.35 cm. longa, parte libera oblique triangula, anguste obtusiuscula, brevissime obtuse apiculata, c. 0.47 cm. longa, 0.4 cm. lata. Petala parallela, gynostemio adpressa, apice leviter recurvula, anguste spathulata, 3-nervia, ungue lineari, lamina lanceolata acuta concava, c. 0.95 cm. longa, ungue 0.075 cm., lamina 0.17 cm. lata. Labellum parallelum gynostemio porrectum, apice recurvulum, spathulatum, basi pedi gynostemii adnatum, concavum, supra medium breviter saccatum, totum c. 1 cm. longum, a sacco usque ad apicem 0.57 cm. metiens, ungue oblongo, recto, basi in auriculas 2 deflexas late rotundatas producto et paulo dilatato, medio c. 0.2 cm. lato, lamina valde concava, explanata late rhombea, apice breviter anguste obtuse producta, utroque latere rotundata, c. 0.64 cm. longa, 0.6 cm. lata, sacco late rotundato, pariete postico cum ungue angulum rotundato-rectum faciente et in fauce leviter convexo-incrassato. Gynostemium longiusculum, subrectum, a dorso compressum, dorso convexum, marginibus in utraque stigmatis parte rotundato-dilatatis incurvisque, subtus fascia longitudinali convexa, absque anthera c. 0.6 cm. longa, clinandrio excavato, transverse ovali, margine postico semiorbiculari-exciso cum filamento tenuiter subulato, auriculis latis oblique truncatis repandulisque. Anthera cucullata, orbiculari-ovata, basi retusa, apice plus minusve producto obtusa retusaque, connectivo longitudinaliter incrassato cum sulco, c. 0.18 cm. lata. Pollinia 8, compressa, oblique ovalia. Rostellum rotundato-excisum. Stigma suborbiculare, margine inferiore truncatum. Pes gynostemii cum ovario angulum acutum, cum gynostemio angulum obtusum faciens, c. 0.16 cm. longus. Ovarium 6-sulcatum, cum pedicello c. 1.55 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 3000 m., terrestrial in open country between moss. (H. J. LAM n. 1828 (type), 30 October 1920; "creeping, pseudobulbs violet, leaf rather dark green above light-green beneath, flower brick-red, tips of sepals and especially of petals lighter, lip nearly white, column red, pollinia yellow, ovary and pedicel dark violet"). Same locality, 2700 m., moss-grown forest, terrestrial in moss-cushions. (H. J. LAM n. 1997, 14 November 1920; pseudobulbs dark brown, leaves bright green, flowers brick-red, tips of laciniae white, column yellowish white, tip brown").

From all species described this differs by an anther retuse at top, as is the case in many species of *Glomera* and *Aglossorhyncha*. For the rest it closely resembles *M. erectum* Schltr. the petals excepted which in this species are linear. *M. bifolium* J. J. S. which also shows the same colour has besides a more compact habit, and the auricles at the base of the lip are much narrower. Additional material of these three species should be compared.

Description from herbarium and materials preserved in alcohol.

Mediocalcar compressicalcar J. J. S. n. sp.

Tab. LV, 39.

Rhizoma elongatum, ramosum, radicans, vaginis basi tubulosis apice conduplicato-triangulis acutis imbricantibus tectum, partibus adsunt c. 30 cm. longis. Pseudobulbi omnino rhizomati adnati, apicibus ad c. 4.2 cm. distantes, teretes, sicco minute rugulosi, ad c. 1.8 cm. longi, omnes 2-folii. Folia lanceolata, apice acute ad obtuse bidentata cum mucrone tenuiore acuto

interposito, basi contracta, subtus convexa, costa media supra canaliculata, carnosa, c. 2.2—3.7 cm. longa, 0.7—0.87 cm. lata. Inflorescentia solitaria, pedunculo c. 1.2 cm. longo. Bractea parva, adpressa. Flos mediocris, totus c. 1.4 cm. longus, inferne 0.65 cm. latus, 0.75 cm. altus. Sepala in urceolum valde obliquum subtus inferne ventricosum superne longitudine c. 0.5 cm. contractum connata, 5-nervia, carnosula, explanata una c. 1.9 cm. lata. Sepalum dorsale totum c. 1.275 cm. longum, parte libera triangula, anguste obtusa, marginibus superne incurvula, c. 0.43 cm. longa, 0.3 cm. lata. Sepala lateralia margine antico inferne oblique dilatata, concava, tota fere 1.6 cm. longa, parte libera oblique triangula, marginibus superne incurva, anguste obtusa, dorso medio longitudinaliter incrassata, c. 0.45 cm. longa, 0.4 cm. lata. Petala parallela, gynostemio adpressa, lineari-spathulata, canaliculata, praesertim apicem versus carnosula et marginibus incurva, acuta, 3-nervia, c. 1.125 cm. longa, ungue lineari c. 0.1 cm. lato, lamina anguste lanceolata c. 0.14 cm. lata. Labellum apici pedis gynostemii incurvi adnatum, parallelum gynostemio porrectum et eum bene superans, apice recurvulum, spathulatum, 5-nervium, supra medium calcaratum, inexplanatum c. 1.1 cm., explanatum 1.17 cm. longum, ungue oblongo, basin apicemque versus paululum dilatato, basi in auriculas 2 late oblique semiovales obtusas margine postico incurvulas dorso convexas deflexas cum ungui angulum rectum facientes producto, usque ad basin sacci 0.55 cm. longo, medio c. 0.175 cm. lato, lamina concava, marginibus basi excepta valde incurva, explanata late suborbiculari-rhombea, apice longe canaliculato-acuminata, anguste obtusa, utroque latere rotundata, bene 0.6 cm. longa, 0.5 cm. lata, sacco bene evoluto, reverso, cum ungue angulum rotundato-acutum faciente, eo plus duplo breviore, conspicue a dorso compresso-conico, obtuso, fauce lato non incrassato, dorso c. 0.16 cm. longo. Gynostemium longiusculum, subrectum, a dorso compressum, dorso subtusque convexum, marginibus acutum, in utraque stigmatis parte rotundato-dilatatum, apice truncatum et minute erosulum, dorso leviter rotundato-exciso cum apiculo (filamento), absque anthera c. 0.6 cm. longum, clinandrio brevissime contracto excavato triangulo. Anthera cucullata, subreniformis, apice obtuse producta. Rostellum excisum. Stigma transversum. Pes gynostemii cum ovario angulum acutum, cum gynostemio angulum obtusum faciens, obtusangule incurvus, c. 0.24 cm. longus. Ovarium pedicellatum teres, 6-sulcatum, c. 1.5 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2750 m., mossy forest, terrestrial in moss-cushions. (H. J. LAM n. 1827, 30 October 1920; "roots brown, pseudobulbs violet-brown, leaves brownish green above light green beneath, flower brick-red with the tips lighter, those of petals white, column with dark brown top, ovary and pedicel dark violet").

Differs from the allied species in the much compressed conical spur very broad at the throat.

The only flower at hand was fertilized; perhaps some of the characters described above may be put down to this fact.

Description from herbarium and a shoot with one flower preserved in alcohol.

Ceratostylis Bl.

Sect. Euceratostylis.

Ceratostylis mamberamensis J. J. S. n. sp.

Tab. LV, 40.

Caespitosa. Rhizoma abbreviatum, ramosum, radicibus tenuibus laxe pilosis. Caules approximati, teretes, carnosi, c. 12—26 cm. longi, 0.23—0.28 cm. diam. (in spiritu vini), 1-folii,

pluribus vaginis accrescentibus imbricatis membranaceis prominule reticulato-venosis ad c. 4 cm. longis initio ad basin. Folium erectum, subulatum, acutum, supra canaliculatum, margine folii superne e linea tenuissime prominula, carnosum, c. 4.25—6 cm. longum, 0.3 cm. diam. (in spiritu vini); vagina tubulosa, antice rumpens, bene 0.2 cm. longa. Inflorescentia fascicularis, pedunculis brevissimis c. 0.2 cm. longis nonnullis vaginulis imbricatis cupuliformibus late ovatis inflatis apice breviter recurvulis acuminatisque hyalinis donatis compacta. Bractea basi tubulosa, ceterum aperta, dorso supra basin plus minus inflata, acuta, hyalina, c. 0.275 cm. longa. Flos c. 0.5 cm. longus, sepalis dorso tenuiter adpresse pubescentibus apice valde recurvis petalisque inferne parallelis. Sepalum dorsale oblongum, obtusum, minute apiculatum, basi leviter concavum, 3-nervium, c. 0.4 cm. longum, 0.14 cm. latum. Sepala lateralia lacinia obliqua inflato-concava inferne pedi gynostemii adnata mentum reversum ovario subparallelum rectum apice praesertim dorso leviter inflatum obtusissimum ovario conspicue brevius bene 0.1 cm. longum formantia, marginibus anticis alte connata, apice libero recurva, explanata tota c. 0.5 cm. longa e parte calcariformi in laminam late ovatam bifidam c. 3.5 cm. longam 0.3 cm. latam dilatata, apicibus liberis oblique triangulis, obtusis, acute conico-apiculatis, 3-nervjis, c. 0.2 cm. longis, 0.125 cm. latis. Petala porrecta, basi concava gynostemio adpressa, superne recurva convexaque, oblique lanceolata ad subrhombeo-lanceolata, acuta, c. 0.375—0.3 cm. longa, 0.075—0.1 cm. lata. Labellum supra basin obtusangule recurvulum, parallelum gynostemio porrectum, gynostemium longe superans, oblongum, basi breviter contractum, parte inferiore concavum marginibus erectis ciliolatis gynostemio adpressum, $^1/_3$ superiore leviter contractum convexo-incrassatum subovatumque, obtusum, incrassatione utrinque breviter in margines decurrente, carinis 2 tenuibus parallelis ciliolatis a basi usque in medium labelli, costa tertia a medio incrassationis apicalis decurrente basin versus valde decrescente, subtus convexum, 3-nervium, explanatum c. 0.44 cm. longum, 0.175 cm., apice 0.14 cm. latum. Gynostemium usque ad $^1/_3$ supra basin bipartitum, dorso convexum, c. 0.17 cm. longum, brachiis porrectis, parallelis, antheram bene superantibus, oblongis, rotundatis, extus convexis, intus concavis. Anthera cucullata, tenuis, apice semiorbiculari-producta cum margine incurvo, basi dilatata lobulataque, c. 0.075 cm. lata. Pollinia 8, pyriformia. Pes gynostemii reversus, cum ovario angulum anguste acutum faciens, dimidio superiore subrectangule incurvus et a sepalis lateralibus liber, linearis, apicem versus sensim angustatus, leviter canaliculatus cum costula humili longitudinali, bene 0.1 cm. longus. Ovarium pedicellatum teres, pubescens, c. 0.3 cm. longus.

Dutch New-Guinea: In the northern part, Mamberamo, Casuaris-hill near Prauwen-bivouac, epiphytical in cut open forest. (H. J. LAM n. 1071, 6 September 1920; "stem light green, sepals and petals purplish, lip yellow, column yellowish white, ovary purplish").

Remarkable for the lateral sepals being connate with their anterior margins. This is also the case in *C. Amesiana* Ridl. and *C. phaeochlamys* Schltr., which, however, according to the descriptions, are specifically different.

Description from herbarium and materials preserved in alcohol.

Ceratostylis sacculata J. J. S. n. sp.

Tab. LV, 41.

Caules approximati, teretes, c. 2.3—6.8 cm. longi, 0.1—0.13 cm. diam., pluribus vaginis accrescentibus imbricatis acutis membranaceis prominule nervosis ad c. 1 cm. longis ad basin,

radicibus tenuibus villosis. Folium erectum, subulatum, acutum, canalicula obtusangula lateribus convexa usque ad apicem, marginibus e linea elevatula in utraque canaliculae parte, c. 1.75—2.2 cm. longum, 0.1—0.16 cm. diam.; vagina canaliculata, basi tubulosa, c. 0.2 cm. longa. Inflorescentia fascicularis, pauciflora, pedunculis parce puberulis, c. 0.18—0.24 cm. longis, vaginulis 2 tubulosis acutis donatis. Bractea late ovata, acuta, concava, membranacea, c. 0.15 cm. longa. Flos c. 0.37 cm. longus, 0.27 cm. latus, sepalis basi subparallelis apice recurvis. Sepalum dorsale oblongo-ovatum, obtusum, acute apiculatum, basi concavulum, superne convexum, 1-nervium, c. 0.275 cm. longum, bene 0.1 cm. latum. Sepala lateralia basi anteriore in lobulum oblique suborbicularem inflato-concavum dilatata, marginibus anticis breviter connata, mentum breve saccatum reversum ovario adpressum subobovoideum rotundatum basi contractum parce pubescens vix 0.1 cm. longum 0.12 cm. latum formantia, parte libera oblique ovato-oblonga, apicem versus angustata, obtusa, dorso ad basin parce pubescentia, 1—2-nervia, c. 0.24 cm., usque ad apicem menti 0.35 cm. longa, 0.125 cm. lata. Petala porrecta, apice recurvula convexaque, inferne concava, oblique anguste elliptica, sensim acute acuminata, 1-nervia, c. 0.24 cm. longa, fere 0.1 cm. lata. Labellum porrectum, supra basin obtusangule recurvum, gynostemio parallelum et eum longe excedens, leviter undatum, anguste oblongum, subtus convexum, supra parte inferiore concavum marginibus ciliolatum, $^2/_5$ partibus superioribus carnoso-incrassatum convexum apicem versus angustatum, obtusum basi excavatum supra valde papillosum, costis 2 parallelis tenuibus parce papillosis vix $^1/_4$ longitudinis labelli aequantibus, costa tertia a parte incrassata decurrente mox evanescente, 3-nervium, explanatum c. 0.36 cm. longum, 0.13 cm. latum, parte incrassata c. 0.17 cm. longa, fere 0.1 cm. lata. Gynostemium fere usque ad basin bipartitum, anguste U-forme, c. 0.125 cm. longum, brachiis porrectis, parallelis, antheram bene superantibus, oblique oblongis, obtusis, extus convexis, intus concavis. Anthera cucullata, convexa, suborbicularis, apice rotundata, basi dilatata quadrilobulataque, lobulis intermediis minoribus, c. 0.04 cm. lata. Pollinia 8, pyriformia. Pes gynostemii parvus, cum ovario angulum acutum faciens, dimidio superiore obtusangule incurvus et a sepalis lateralibus liber, angustus, linearis, c. 0.07 cm. longus. Ovarium pedicellatum teres, pubescens, c. 0.16 cm. longum. Capsula immatura 6-costata, in costis pubescens.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, epiphytical in moss-grown forest. (H. J. LAM n. 1920, 8 November 1920; "leaves light green, sepals dirty red, petals dirty rosy, lip dirty light yellow, column pale yellow, ovary violet, fruit dark violet brown").

Allied to *C. inflata* Schltr. but with shorter stems, smaller flowers, a shorter mentum and narrower petals.

Description from a single specimen preserved in alcohol.

Ceratostylis ovatilabris J. J. S. n. sp.

Tab. LV, 42.

Caules approximati, fasciculati, tenues, teretes, c. 3.5—9.5 cm. longi, ad 0.1 cm. diam., 1-folii, nonnullis vaginis accrescentibus imbricantibus acutis ad c. 2.5 cm. longis ad basin, radicibus tenuibus. Folium erectum, teres, apice lateraliter compressum productumque, supra visum satis acutum, a latere visum obtusum, supra usque ad apicem obtusangule canaliculatum, carnosulum, c. 3.75—5 cm. longum, 0.1 cm. diam.; vagina canaliculata, basi tubulosa, c. 0.175—0.2 cm. lata. Inflorescentia fascicularis, pedunculis paucis, brevissimis, c. 0.16 cm.

longis, 1-floris, nonnullis vaginulis tubulosis subinflatis obtusis glabris membranaceis ad c. 0.4 cm. longis tectis. Bractea patens, valde concava, obtusa, c. 0.125 cm. longa. Flos minutus, c. 0.2 cm. longus. Sepalum dorsale leviter concavum, superne recurvum et leviter convexum, oblongum, obtusum, subglabrum, 1-nervium, c. 0.18 cm. longum, fere 0.1 cm. latum. Sepala lateralia basi in laciniam brevem obliquam inflato-concavam producta, mentum saccatum reversum ovario adpressum latius quam longum transverse quadrangulum rotundato-truncatum c. 0.04 cm. longum formantia, marginibus anticis breviter connata, subglabra, parte libera divergentia, late oblique ovato-triangula, obtusa, 1-nervia, explanata tota c. 0.2 cm., usque ad apicem ovarii 0.175 cm., partis liberae margine antico 0.125 cm. longa, 0.12 cm. lata. Petala porrecta, superne recurva, oblique lanceolata, apicem versus angustata, anguste obtusa, basi breviter cuneata, magnam partem convexa, 1-nervia, bene 0.175 cm. longa, 0.06 cm. lata. Labellum subsessile, vix unguiculatum, porrectum, gynostemium longe superans, ovatum, concavum, subtus convexum, supra medium obtusangule recurvulum et convexo-incrassatum, 3-nervium, costis 2 brevibus longitudinalibus in $^1/_3$ supra basin labelli terminantibus, costa tertia a parte incrassata decurrente decrescente et evanescente, explanatum triangulo-ovatum, obtusum, angulis basilaribus rotundatum, c. 0.18 cm. longum, fere 0.15 cm. latum. Gynostemium fere usque ad basin bipartitum, supra visum U-forme, c. 0.07 cm. longum, brachiis porrectis, parallelis, antheram bene superantibus, parallelis, verticalibus, oblique ovalibus, apice rotundatis, extus convexis, intus concavis. Anthera cucullata, convexa, suborbicularis, apice rotundata, inferne tenuiter marginata quadrilobulataque, fere 0.05 cm. lata. Pollinia 8, pyriformia. Pes gynostemii abbreviatus, crassitudinem ovarii vix excedens, dentiformis. Ovarium 6-sulcatum, pubescens, c. 0.175 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1800 m., epiphytical in moss-grown forest. (H. J. LAM n. 1921, 8 November 1921; "leaves light green, flowers snowy white, ovary greenish white").

Near *C. arfakensis* J. J. S. but with a well developed mentum and narrower petals. Description from a specimen preserved in alcohol.

Ceratostylis muscicola J. J. S. n. sp.

Tab. LVI, 43.

Rhizoma breve, ramosum, caespitosum. Caules approximati, sectione transversa ovales, c. 9.5—20 cm. longi, 0.2—0.275 cm. diam., 1-folii, initio inferne vaginis imbricatis acutis laxe reticulato-venosis membranaceis superne accrescentibus ad c. 5.5 cm. longis tecti. Folium erectum, lineare, apice conduplicatum et valde lateraliter compressum, basi sensim angustatum, obtusangule canaliculatum, carnosum, c. 14—17 cm. longum, 0.5—0.675 cm. latum; vagina tubulosa, antice rumpens, c. 0.45—0.55 cm. longa. Inflorescentia fascicularis, pedunculis c. 0.2 cm. longis, 1-floris, vaginulis c. 4 basi oblique infundibuliformibus acutis imbricantibus glabris membranaceis hyalinis donato. Bractea vaginulis similis, c. 0.275—0.3 cm. longa. Flos parvus, c. 0.4 cm. longus, sepalis petalisque subparallelis apice leviter divergentibus. Sepalum dorsale oblongum, a medio angustatum, acutum, concavum, dorso vix puberulum, 3-nervium. c. 0.25 cm. longum, 0.13 cm. latum. Sepala lateralia margine antico paulo dilatata connataque mentum breve saccatum reversum cum ovario angulum acutum faciens rotundatum vix 0.1 cm. longum formantia, oblique oblonga, apicem versus angustata, acuta, concava, dorso inferne puberula, 3-nervia,

c. 0.25 cm., margine antico 0.35 cm. longa, basi 0.175 cm. metientia, supra basin 0.14 cm. lata. Petala oblique lanceolata, $^2/_5$ partibus superioribus acuminata, acuta, 1-nervia, bene 0.2 cm. longa, 0.07 cm. lata. Labellum pedi gynostemii gynostemioque parallelum, supra basin obtusangule recurvulum, brevissime unguiculatum, oblongum, marginibus dimidio inferiore tenui ciliolatis, a medio accrescenti-incrassatis glabrisque, $^1/_3$ parte superiore carnoso-incrassatum et vix contractum, convexum, obtusum, subtus convexum cum sulco inconspicuo longitudinali, costis 2 parallelis tenuibus ciliolatis in dimidio inferiore, costa tertia ab incrassatione apicali usque ad basin decurrente inferne tenuissima, explanatum totum c. 0.32 cm. longum, ungue 0.04 cm. longo, 0.14 cm. latum. Gynostemium breve, ultra medium bifidum, dorso convexum, utroque latere costula longitudinali instructum, c. 0.15 cm. longum, brachiis porrectis, parallelis, rectis, oblongis, rotundato-truncatis, intus concavis, extus convexis. Anthera cucullata, convexa, semiovalis, apice rotundata, basi quadrilobulata, c. 0.06 cm. lata. Pollinia 8, parva, oblique obovata, extus convexa, intus plana. Rostellum U-formiter excisum. Pes gynostemii brevissimus, cum ovario angulum acutum, cum gynostemio angulum obtusum faciens, c. 0.06 cm. longus. Ovarium pedicellatum puberulum, c. 0.26 cm. longum. Capsula trigona cum costa in lateribus, basi apiceque obtusa, c. 0.95 cm. longa, lateribus 0.26 cm. lata.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1780 m., moss-grown forest, epiphytical. (H. J. LAM n. 1917, 8 November 1920; "stem and leaf light green, sheaths at the base light brown, sepals and petals dirty red at the base, pale yellow at the tips, lip bright yellow, base pale yellow, column pale yellow, ovary dirty red, fruit greenish yellow").

In the form of the leaf this resembles *C. glabra* Ridl., but the sepals and ovary are puberulous and the mentum is much shorter.

Description from herbarium and material preserved in alcohol.

Eria Lndl.

Sect. Goniorhabdos.

Eria javanica Bl. Rumphia II (1836), 23; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 829, 13 August 1914; W. FEUILLETAU DE BRUYN n. 189, 8 November 1914; H. J. LAM n. 689, 21 July 1920).

Sect. Hymeneria.

Eria oligotricha Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 181; etc.

Dutch New-Guinea: In the northern part, without locality. (A. C TH. THOMSEN, 28 April 1914). To the west of Doorman-river, near a rivulet, 350 m. (H. J. LAM n. 1302, September 1920). Mamberamo, Casuaris-hill near Prauwen-bivouac, 200 m., cut open forest. (H. J. LAM n. 1074, September 1920).

Eria atrorubens Schltr. Orch. D. N. Guinea (1912), 665.

Dutch New-Guinea: In the southern part. (A. C. DE KOCK, liv. pl. cult. in Hort. Bog. sub n. 184).

Eria Hollandiae J. J. S. in Bull. Dép. Agric. Ind. néerl. n. XLV (1911), 7; in Nova Guinea VIII (1911), 578, t. XCVII.

Dutch New-Guinea: In the northern part, Manokoeari. (R. F. JANOWSKY 1914, liv. pl. cult. in Hort. Bog. sub n. 26).

From a cultivated specimen I noted that the pseudobulbs are shining and dark olive-green, the leaves shining green on both surfaces, the bracts reflexed, concave, pale greenish with the indumentum pale only brownish at the tip, the flowers pale yellowish with a somewhat darker lip.

Eria Lorentziana J. J. S. et Krzl. in Pflanzenr. IV. 50. II. B. 21 (1911), 132; J. J. S. in Nova Guinea VIII (1911), 578, t. XCVIII A. — *E. clausa* J. J. S. in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 13. — *E. diphylla* Schltr.! Orch. D. N. Guinea (1912), 663.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 20 m., epiphytical in forest. (A. C. Th. Thomsen n. 640, 3 April 1914; H. J. Lam n. 425, 26 June 1920).

I have but little doubt that *E. diphylla* Schltr. belongs here.

Sect. Mycaranthes.

Eria leucotricha Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 180; Krzl. in Pflanzenr. IV. 50. II. B. 21 (1911), 125.

Tab. LVI, 44.

Dutch New-Guinea: Geelvink-Bay, Jabi-mountains, near Wappe, Upper-Mino. (R. F. Janowsky n. 397, 1 June 1913.

Sect. Trichotosia.

Eria ediensis J. J. S. n. sp.

Tab. LVI, 45.

Caules elongati, validi, sectione transversa ovales, dense adpresse rufo-hirsuti, c. 80 cm. longi, bene 0.6 cm. lati, internodiis c. 2.5—4.5 cm. longis. Folia basi semitorta, oblique lanceolata, apice oblique angustata, unilateraliter acuminata, anguste obtusa, subtus dense breviuscule hirsuta, subtus indumento minus denso, supra convexa cum canalicula longitudinali, carnosula, c. 12.5 cm. longa, 2.7 cm. lata, superiora descrescentia; vaginae tubulosae, dense hirsutae. Inflorescentiae vaginam dorso ad basin perforantes, breviter pedunculatae, 10—12-florae, pedunculo crasso, dense patentissime hirsuto, c. 1—1.7 cm. longo, vaginulis brevibus valde concavis bracteis similibus sed minoribus tecto, rachide pedunculo simili, c. 4—4.7 cm. longa. Bracteae reflexae, late abbreviato-ovatae, rachidem semiamplectentes, subacuminatae, obtusae, valde concavae, dorso dense patentissime hirsutae, intus glabrae, carnosae, c. 0.9 cm. longae, 1 cm. latae. Flores mediocres, carnosi, c. 1.65 cm. lati, sepalis dorso longe patenter hirsutis, intus margine excepto laxius subadpresse hirsutis. Sepalum dorsale oblongum, apice angustatum, anguste obtusum, dorso ad apicem gibbo conspicuo conico obtuso incurvulo instructum, apice concavum, fere 1.2 cm. longum, absque pilis 0.5 cm. latum. Sepala lateralia margine antico basin versus in laciniam oblique oblongam inferne dilatatam valde concavam ad pedem gynostemii decurrentia, mentum mediocre cum ovario angulum acutum faciens marginibus anticis contiguis calcariforme apice abrupte incurvum obtusum dorso convexum c. 0.9 cm. longum formantia, parte antica oblique triangula, rotundata, dorso ad apicem gibbo conspicuo reverso erecto-patenti conico hirsuto instructa, bene 1.6 cm. longa (absque pilis), basi 1.3 cm. lata, parte libera basi 0.8 cm. lata. Petala suboblique lineari-ligulata, superne vix dilatata, obtusa, costa media dorso

sulcata, intus laxius dorso densius subadpresse pilosa, margine pilis raris ciliata, bene 1 cm. longa, 0.275 cm. lata. Labellum apici pedis gynostemii incurvo insertum, basi valde sigmoideum et pedi gynostemii adpressum, deinde abrupte recurvum, apice obtusangule recurvulum, spathulatum, 3-lobum, concavum, dorso convexum cum sulco longitudinali, costis 2 parallelis conspicuis inferne sensim evanescentibus antice ad basin lobi intermedii abrupte terminantibus, intus pilis raris adspersum, dorso sulco marginibusque exceptis erecto-patenter hirsutum, carnosum, explanatum oblongo-spathulatum, c. 1.6 cm., usque ad apicem loborum lateralium 1.23 cm. longum, ungue supra basin constricto inferne 0.3 cm. parte angustissima 0.24 cm. lato, ad lobos laterales 0.6 cm. latum; lobi laterales minuti, antice obtuse dentiformes; lobus intermedius recurvulus, transverse quadrangulus, apice latus, haud vel vix retusus cum apiculo minimo, irregulariter crenatus, utroque latere parce ciliatus, incrassatione humili longitudinali leviter convexa inferne evanescente, c. 0.4 cm. longus, 0.55 cm. latus. Gynostemium rectum, a dorso compressum, leviter clavatum, dorso convexum, dorso marginibusque hirsutum, subtus brevissime puberulum, c. 0.575 cm. longum, apice late obtuse triangulo-productum, clinandrio excavato elliptico-orbiculari. Anthera cucullata, basi lobulata, connectivo obtuse subsemigloboso-conico-incrassato, c. 0.175 cm. lata. Pollinia 8, lateraliter compressa, suborbicularia ad pyriformia. Rostellum reversum, rotundatum, concavum. Stigma latum, transverse obverse reniformi-ovale. Pes gynostemii cum ovario angulum acutum cum gynostemio angulum obtusum faciens, rectus, $^1/_4$ superiore fere rectangule incurvus, linearis, marginibus elevatis canaliculatus, brevissime pilosus, marginibus sparse longe ciliatus, apice a sepalis lateralibus liber dilatatus truncatus intus convexus glaber, totus c. 1 cm. longus. Ovarium breve, apice obliquum, dense erecto-patenter hirsutum, c. 0.8 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo. Edi-falls, 40 m., epiphytical in forest, shade. (A. C. Th. THOMSEN n. 681, 14 April 1914; "flower red with a yellow lip").

Near *E. iodantha* Schltr. but with broadly ovate bracts, the sepals inside petals and lip on both sides and column hairy, the lip with distinct though small sidelobes.

Description from herbarium and materials preserved in alcohol.

Eria latifrons J. J. S. n. sp.

Tab. LVII, 46.

Caules elongati, pars adest 18 cm. longa, internodiis c. 2—2.2 cm. longis. Folia oblique anguste lanceolata, apice valde obliqua, non dentata, latere breviore acuto, latere longiore c. 0.5—0.7 cm. longo obtuso, basi leviter angustata, novella praesertim ad marginem laxe adpresse rufo-hirsutula, adulta supra margine excepto glabrescentia, subtus patentissime hirtello-puberula, costa media dorso prominente, coriacea (sicco), c. 7—9 cm. longa, macerata c. 1.7 cm. lata; vaginae tubulosae, apice truncatae, adpresse rufo-hirsutae praesertim ad basin, apice antice longe rufo-ciliatae, internodia superantes. Inflorescentiae 2 vaginas perforantes, breves, laxe 6—7-florae, pedunculo rufo-hirsuto, c. 0.5—0.6 cm. longo, nonnullis vaginulis conspicuis latis donato, rachide flexuosa, patenter rufo-hirsuta, c. 1.5—2 cm. longa. Bracteae patentissimae, ovatae, acuminatae, anguste obtusae, concavae, dorso subadpresse rufo-hirsutae, c. 0.775 cm. longae, 0.5 cm. latae. Flores patentissimi, bene 1.1 cm. longi, sepalis dorso subadpresse rufo-hirsutis petalisque subparallelis. Sepalum dorsale horizontale, oblongum, apice angustatum,

subobtusum, breviter obtuse apiculatum, leviter concavum, 3-nervium, nervis exterioribus furcatis, fere 0.8 cm. longum, 0.275 cm. latum. Sepala lateralia lacinia oblique oblonga valde curvata concava ad pedem gynostemii decurrentia, mentum cum ovario angulum acutum faciens inferne subrectum medio fere subrectangule incurvum obtusum c. 0.35 cm. longum formantia, oblique triangulo-oblonga, falcatula, obtusa, leviter concava, costa media dorso incrassata apice in apiculum lateraliter compresso-conicum obtusum producta, c. 0.87 cm. longa, basi 0.7 cm., supra basin 0.35 cm. lata. Petala oblique spathulata, subfalcatula, apice obtusangula et irregulariter marginata, glabra, 3-nervia, tenuia, c. 0.7 cm. longa, 0.2 cm. lata. Labellum spathulatum, trilobum, canaliculatum, basi valde excavato-concava parti apicali pedis gynostemii parallelum abrupte incurvum et ea adpressum, supra basin abrupte recurvum cum pede gynostemii angulum acutum faciens, gynostemium bene superans, intus magnam partem minute papillosum, 3-costatum, costis exterioribus usque infra apicem loborum lateralium productis abrupte terminantibus, costa intermedia brevi inter apices costarum exteriorum usque in $^1/_3$ supra basin lobi intermedii producta papillis longis tecta, explanatum totum c. 0.9 cm. longum, ungue lineari canaliculato; lobi laterales brevissimi, apice brevissime liberi, obtusi, mesochylium obovatum c. 0.36 cm. longum et latum formantes; lobus intermedius porrectus, mesochylio multo latior, transverse oblongus, basi brevissime et late contractus, apice retusus cum apiculo (an semper?), erosulo-crenulatus, lobis angulato-rotundatis subfalcatulo-recurvulis, c. 0.275 cm. longus, 0.6 cm., basi fere 0.3 cm. latus. Gynostemium curvatum, clavatum, c. 0,4 cm. longum, clinandrio alte excavato cum costula longitudinali, suborbiculari. Anthera majuscula, cucullata, leviter a dorso compressa, c. 0.13 cm. lata. Rostellum rotundatum, recurvulum. Stigma latum, transverse subsemilunatum. Pes gynostemii cum ovario angulum acutum faciens, parte inferiore subrectus vix obtusangule incurvulus, parte superiore c. 0.175 cm. longa rectangule incurvus, linearis, apice paululum dilatatus, intus patentissime hirtellus, inexplanatus c. 0.4 cm. longus. Ovarium pedicellatum dense longe subadpresse rufo-hirsutum, c. 0.5 cm. longum.

Schouten-Islands: Isle of Soepiori, Sowek. (W. FEUILLETAU DE BRUYN n. 257, 25 July 1915).

Without doubt this is a near ally of *E. atroferruginea* Schltr. It differs however in the much smaller leaves, short racemes, ovate acuminate bracts, somewhat smaller flowers with the mentum abruptly incurved above the middle, spathulate glabrous petals. From *E. hapalostachys* Schltr., which apparently belongs to the same affinity, it is to be distinguished by the short racemes, glabrous petals and column, abruptly incurved mentum, distinctly three-lobed lip.

Eria Thomsenii J. J. S. n. sp.

Tab. LVII, 47.

Caules approximati, validi, elongati, leviter flexuosi, sectione transversa ovales, adpresse hirsuti, 35 cm. superantes. Folia patentia, anguste oblique lanceolata, apice longe et valde oblique angustata, dimidio longiore 0,5—0.6 cm. producto angusto anguste obtuso, supra in utraque parte costae mediae supra sulcatae subtus praesertim versus apicem prominentis convexa, adulta glabra, novella utrinque margineque sparse adpresse hirsuta, carnosa, ad c. 13.5 cm. longa, 2.2 cm. lata, superiora et inferiora minora; vaginae tubulosae, internodia aequantes vel paulum superantes, initio subadpresse hirsutae, deinde plus minusve glabratae. Inflorescentiae

e nodis, etiam in parte inferiore caulium, saepe 2 vaginas perforantes, laxe pluriflorae, quaquaversae, patenter hirsutae, pedúnculo c. 1.2 cm. longo, nonnullis vaginulis bracteiformibus donato, rachide c. 4.7 cm. longa. Bracteae orbiculari-ovatae, breviter conico-acuminatae, valde concavae, dorso hirsutae, ad c. 0.95 cm. longae, bene 0.8 cm. latae, superiores minores. Flores c. 9, carnosi, c. 1.65 cm. lati, sepalis dorso longe erecto-patenter hirsutis. Sepalum dorsale recurvum, oblongum, obtusum, apiculo conico obtuso dorso ad apicem, convexum, intus inferne sparse adpresse hirsutum, 5-nervium, c. 0.95 cm. longum, 0.35 cm. latum. Sepala lateralia lacinia brevi oblique oblonga concava ad pedem gynostemii decurrentia, mentum breve cum ovario angulum acutum faciens conicum apice incurvulum obtusum dorso convexum c. 0.44 cm. longum formantia, marginibus anticis e basi divergentia, patentissima, oblique triangula, subfalcatula, apice angustata, obtusa, dorso ad apicem in apiculum conicum producta, intus parce pilosa, 6-nervia, c. 0.85 cm. longa, margine antico bene 1 cm. metientia, basi bene 0.7 cm. lata. Petala apice leviter recurvula et convexa, oblique lanceolata, apicem versus paulo dilatata, obtusa, glabra, 3-nervia, c. 0.85 cm. longa, fere 0.2 cm. lata. Labellum gynostemio parallelum recurvulum, concavum, 3-lobum, gynostemium superans, intus lobo medio et loborum lateralium margine exceptis puberulum, subtus puberulo-papillosum, 3-costatum, costis exterioribus infra basin lobi intermedii terminantibus basin versus obsoletis, costa intermedia brevi inter apices costarum lateralium usque in basin lobi intermedii ubi paulo dilatata, subtus longitudinaliter sulcatum, 3-nervium, nervis exterioribus ramosis, explanatum spathulatum, ex ungue oblongo in mesochylium transverse ovali-quadrangulum dilatatum, bene 1 cm., usque ad apicem loborum lateralium 0.8 cm. longum, ad lobos laterales 0.6 cm. latum; lobi laterales breves, antice non producti, obtusi ad rotundati; lobus intermedius recurvulus, brevis, latus, anguste transverse oblongus, repandulo-crenulatus, brevissime subtus vix papillosus, explanatus bene 0.2 cm. longus, 0.65 cm. latus. Gynostemium subrectum, leviter a dorso compressum, stigma versus dilatatum, dorso convexum cum fascia longitudinali pilorum erecto-patentium, subtus concavum cum costa longitudinali inconspicua et papillosum, margine superne longius papillosum, c. 0.5 cm. longum, clinandrio excavato, suborbiculari, margine plus minusve denticulato ad lobulato. Anthera cucullata, connectivo conspicuo subsemigloboso-incrassato cum costa longitudinali obtusa minute verruculoso, c. 0.15 cm. lata. Pollinia 8, a latere compressa, oblique obovata ad oblique obtuse triangula. Rostellum recurvum. Stigma transverse rhombeo-obreniforme. Pes gynostemii cum ovario angulum acutum, cum gynostemio angulum obtusum faciens, rectus, apice tantum incurvulus, linearis, marginibus erectis canaliculatus, apice dilatatus et breviter a sepalis lateralibus liber, truncatus, c. 0.43 longus. Ovarium breve, crasse oblique obconicum, longe erecto-patenter hirsutum, c. 0.6 cm. longum.

Dutch New-Guinea: Mamberamo. (A. C. Th. Thomsen n. 878, 19 September 1914).

This new species differs from *E. phaeotricha* Schltr. in the pubescent lip, whereas the midlobe is not or scarcely broader than the rest of the lip, and from *E. paludosa* J. J. S. in the glabrous petals, the lip puberulous beneath, the blunt side lobes, not retuse midlobe, less curved column pilose on the back.

The native collector describes the flowers as red with a white lip.

Description from a poor dried specimen and flowers preserved in alcohol.

Dendrobium Sw.

Sect. Cadetia.

Dendrobium furcillatum J. J. S. n. sp.

Tab. LVII, 48.

Pseudobulbi subcylindrici, obtusi, basi attenuati, longitudinaliter tricanaliculati, superne sparse minutissime impresse puncticulati, c. 0.6 cm. longi, 0.2 cm. diam., 1-folii. Folium erectum, recurvulum, lanceolatum, breviter bidentatum cum mucrone longiore interposito, basi vix contractum, supra in utraque parte canaliculae longitudinalis valde convexum marginibus recurvis, subtus in utraque parte costae mediae prominentis concavum, rigide carnosum, c. 1.2 cm. longum, 0.36 cm. latum. Inflorescentia solitaria pone folium (probabiliter etiam ante folium), erecta, 1-flora, pedunculo brevi, c. 0.175 cm. longo, vaginula concava, basi tubulosa, apiculata, tenui, c. 0.3 cm. longa. Bractea minima, adpressa, triangula. Flos c. 0.7 cm. longus et latus. Sepalum dorsale erectum, cum ovario angulum rectum faciens, marginibus lateralibus valde recurvis dorso contiguis valde convexum, ovatum, subacutum, 1-nervium, bene 0.3 cm. longum, fere 0.2 cm. latum. Sepala lateralia cum pede gynostemii mentum reversum ovario parallelum curvulum leviter a dorso compressum late oblongum apice latum retuso-bilobulum parcissime furfuraceo-puncticulatum c. 0.275 cm. longum formantia, parte antica oblique porrecta, valde convexa, apice valde oblique recurva, oblique subovata, falcatule recurva, apice acutiuscula subrectangula, 3-nervia, parte libera c. 0.43 cm., margine antico 0.6 cm. longa, 0.37 cm. lata. Petala porrecta, arcuato-recurva, apice paululum incurva, oblique lanceolata, apice brevissime falcatula, acuta, convexa, dorso concava, 1-nervia, c. 0.33 cm. longa, bene 0.075 cm. lata. Labellum basi pedi gynostemii adnatum, gynostemio parallelum et eum longe superans, $^2/_5$ partibus superioribus recurvulum, spathulatum, 3-lobum, subtus convexum cum sulco longitudinali, 3-nervium, nervis lateralibus furcatis, c. 0.73 cm., explanatum 0.8 cm. longum, ad lobos laterales 0.225 cm. latum; unguis oblongus, longitudine 0.1 cm. pedi gynostemii adnatus, margine incurvulo leviter concavus, parte mediana leviter convexus, intus margine excepto puberulus, subtus papillosus, carnosulus, totus c. 0.4 cm. longus, 0.15 cm. latus; lobi laterales minuti, oblique erecti, gynostemium aequantes, dentiformes, trianguli, obtusiusculi, intus convexi, carnosuli; lobus intermedius porrectus, ambitu cuneato-quadratus, apice lato rotundato-bilobus, glaber, carnosus, sulcis 3 Λ-formiter confluentibus, parte basilari transverse quinquangulari antice irregulariter marginata convexa utroque latere sulcis brevibus transverse rugulosa crenulataque medio sulcis longitudinalibus 3-costulata, parte majore antica in utraque parte sulci longitudinalis convexa, bene 0.3 cm. longus, basi bene 0.2 cm., apice 0.325 cm. latus. Gynostemium a dorso compressum, supra visum ambitu quadratum, marginibus elevatis concavum, margine papillosum, c. 0.175 cm. longum, clinandrio concavo semilunato, filamento brevissimo oblongo-quadrangulo, auriculis antheram bene superantibus, parallelis, oblongo-quadrangulis, apice aequaliter bidentatis, intus leviter concavis. Anthera cucullata, transverse quadrangula, antice leviter concava, apice breviter membranaceo-producta incurva, minute ciliolata, dorso obtuse bilobula, bene 0.1 cm. lata. Pollinia 4, in corpuscula 2 oblique oblonga a dorso compressa supra convexa subtus concava unita, c. 0.075 cm. longa. Stigma conspicuum, gynostemii faciem inferiorem fere plane occupans, basin attigens, quadratum, margine inferiore rotundatum, concavum. Pes gynostemii reversus, late oblongus, apice bilobus, c. 0.3 cm. longus. Ovarium

6-costatum, costis 3 posticis majoribus, minutissime puncticulatum, c. 0.3 cm. longum; pedicellus 0.95 cm. longus. Capsula nutans, ellipsoidea, valde 6-alato-angulata, obtusa c. 0.95 cm. longa, secundum costam dorsalem rima singula dehiscens; pedicellus 6-angulatus, c. 1.3 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., east side, thin moss-grown *Vaccinium*-forest. (H. J. LAM n. 1433a (mixed with n. 1433), 1 October 1920; epiphytical).

This seems to be allied to *D. chionanthum* Schltr., but SCHLECHTER does not mention the three-canaliculate pseudobulbs, the strongly retuse mentum, dentiform side-lobes, quinquangulate disk of the midlobe, and the bidentate auricles of the column.

Description from two pseudobulbs, a flower and a fruit preserved in alcohol.

Dendrobium aprinoides J. J. S. n. sp.

Tab. LVIII, 49.

Rhizoma breve, repens, ramosum. Caules vel pseudobulbi tenues, angulati, apicem versus attenuati, antice vel antice posticeque longitudinaliter alte sulcati, minute puncticulati, carnosi, c. 3.25—5.5 cm. longi, 0.2—0.275 cm. diam., 1-folii, initio vagina tubulosa ad c. 1.7—2 cm. longa ad basin. Folium erectum, lanceolatum vel ovato-lanceolatum, brevissime bidentatum cum mucrone longiore interposito, basi vix contractum, canaliculatum cum lateribus convexis, acute marginatum, dorso carinatum, utrinque minute impresse atro-puncticulatum, carnosum, ad c. 3.5 cm. longum, 0.65—0.87 cm. latum. Inflorescentia ut videtur singula ante et pone folium, 1-flora, nonnullis vaginulis ad c. 0.5—0.55 cm. longis ad basin, pedunculo c. 0.5 cm. longo. Bractea minima, triangula. Flos in sectione mediocris. Sepalum dorsale cum ovario angulum obtusum faciens, oblongum, a medio angustatum, acutum, obtuse apiculatum, marginibus recurvis convexum, apice incurvulum concavumque, 3-nervium, nervo intermedio intus leviter sulcato, dorso sparse atro-punctatum, c. 0.425 cm. longum, 0.17 cm. latum. Sepala lateralia cum pede gynostemii mentum reversum ovario parallelum incurvulum a dorso compressum subovatum obtusum c. 0.25 cm. longum formantia, parte antica patentissima, oblique subellipticooblonga, obtusa, obtuse apiculata, convexa, superne leviter concava, 3-nervia, costa media intus inconspicue sulcata dorso prominula, c. 0.45 cm. longa, 0.25 cm. lata. Petala oblique anguste linearia, anguste obtusa, basi vix dilatata, 1-nervia, bene 0.4 cm. longa, supra basin 0.03 cm. lata. Labellum basi pedi gynostemii breviter adnatum, spathulatum, 3-lobum, subtus longitudinaliter sulcatum, 3-nervium, nervis exterioribus supra basin furcatis, carnosum, inexplanatum bene 0.6 cm., explanatum 0.68 cm. longum, ad lobos laterales fere 0.5 cm. latum, ungue oblongo, medio vix constricto, margine tenuiusculo, leviter concavo, intus margine excepto puberulo, incrassationibus 2 longitudinalibus convexis in parte inferiore, subtus convexo et dense papilloso, c. 0.37 cm. longo; lobi laterales ante gynostemium porrecti, falcato-recurvi, oblique oblongi, obtusi, margine antico rotundati, margine postico suberosuli, concavi, c. 0.18 cm. longi, 0.075 cm. lati; lobus intermedius recurvulus, transverse oblongus, apice leviter retusus cum apiculo minimo, basi brevissime latissime cuneatus, disco triangulo sulcis subirregulariter limitato convexo inconspicue rugoso antice usque ad apicem lobi subulato-acuminato, carnosus, c. 0.27 cm. longus, 0.475 cm. latus. Gynostemium a dorso compressum, quadrangulum, papillosum, c. 0.16 cm. longum, clinandrio transverso concavo, auriculis triangulis anguste obtusis, filamento paulo breviore subulato. Anthera cucullata, transverse quadrangula, apice

truncata inter thecas postice productas fascia triangula papillosa, c. 0.08 cm. lata. Pollinia 4, oblique linearia, a dorso compressa, supra convexa, subtus leviter concava, c. 0.075 cm. longa. Stigma obovatum, apice truncatum. Pes gynostemii reversus, ovario parallelus, incurvulus, late oblongus, concavus, c. 0.275 cm. longus. Ovarium c. 0.3 cm. longum pedicellatum valde quinquecostatum, costa sexta postica inconspicua, sparse atro-puncticulatum, totum 1.7 cm. longum. Capsula flore marcido coronata, curvata, ellipsoidea, valde 5-alato-angulata, costis 2 minoribus sulcatis, secundum sulcum inter costas posticas rima singula dehiscens, c. 1.2 cm. longa, 0.52 cm. diam.

Dutch New-Guinea: Ridge to Doorman-top, east side, 1420 m., low moss-grown *Vaccinium*-forest, epiphytical. (H. J. LAM n. 1435, 1 October 1920).

Near *D. aprinum* J. J. S. but with much narrower petals, shorter side-lobes and a transverse not cuneate midlobe of the lip.

Description from materials preserved in alcohol.

Dendrobium pseudoaprinum J. J. S. n. sp.

Tab. LVIII, 50.

Rhizoma elongatum, radicans, serpentinum, teres, pars adest c. 14 cm. longa, bene 0.3 cm. diam., internodiis elongatis, vaginis tubulosis, angulatis, truncatis, superne transverse rugulosis, sparse furfuraceo-punctatis, ad c. 2 cm. longis. Pseusobulbi c. 2.3—4.2 cm. distantes, rhizomati adpressi, teretes, antice longitudinaliter sulcati, rhizomate tenuiores, sparse furfuraceo-punctati, c. 2.6—3.3 cm. longi, 0.225 cm. diam., 1-folii. Folium recurvum, lanceolatum, apice breviter angustatum brevissime 3-dentatum, basi breviter contractum, marginibus parallelis, supra in utraque parte canaliculae longitudinalis valde convexum, costa media subtus tenuiter prominente, sparse furfuraceo-punctatum, crasse carnosum, c. 3.75—4.5 cm. longum, 0.75—0.925 cm. latum. Inflorescentia 1 ante et pone folium, 1-flora, pedunculo brevi vaginulis paucis membranaceis vix furfuraceis incluso. Flos in sectione satis conspicuus, bene 1 cm. longus, 1.2 cm. latus. Sepalum dorsale reflexum, ovario adpressum, ovatum, subacutum, convexum, 3-nervium, dorso sparse furfuraceo-punctatum, c. 0.6 cm. longum, 0.3 cm. latum. Sepala lateralia lacinia angusta ad pedem gynostemii decurrentia, mentum reversum cum ovario angulum acutum faciens incurvum canaliculis 2 longitudinalibus dorso crasse convexo-carinatum obtusum subtrilobulum bene 0.3 cm. longum formantia, parte antica patentissima, oblique elliptica, subacuta, 3-nervia, dorso sparse furfuraceo-punctata, c. 0.66 cm. longa, fere 0.4 cm. lata. Petala recurvula, apice incurvula, oblique anguste lanceolata, apice oblique subtruncata, retusa, convexa, 1-nervia, c. 0.55 cm. longa, fere 0.15 cm. lata. Labellum basi pedi gynostemii breviter adnatum, unguiculatum, 3-lobum, 3-nervium, nervis exterioribus supra basin furcatis, explanatum c. 0.925 cm. longum, ad lobos laterales fere 0.4 cm. latum, ungue oblongo, superne paulo dilatato, canaliculato, subtus convexo cum sulco longitudinali, utrinque puberulo, carnoso, fere 0.4 cm. longo, superne 0.125 cm. lato; lobi laterales parvi, ante gynostemium porrecti, falcatulo-incurvuli, lineari-subulati, puberuli; lobus intermedius porrectus, e basi breviter unguiculata in laminam conspicuam obreniformem basi latissime cuneatam dilatatus, apice sinu conspicuo obtuso rotundato-bilobus, lobis rotundatis crenulatisque sulco longitudinali separatis convexis glabris, ungue cum disco quinquangulari sulcis limitato convexo puberulo, crasse

carnosus, c. 0.525 cm. longus, 0.825 cm., basi 0.16 cm. latus. Gynostemium rectum, a dorso leviter compressum, dorso subexcavatum, praesertim subtus auriculisque papillosum, bene 0.3 cm. longum, clinandrio excavato, filamento triangulo-subulato, auriculis bene longioribus, porrectis, triangulo-dentiformibus, acutis, interdum margine postico dente instructis. Anthera cucullata, cordata, apice conspicue contracto truncata papillosaque, bene 0.1 cm. lata. Stigma quinquangulare, apice truncatum. Pes gynostemii cum ovario angulum acutum faciens, incurvus, oblongus, concavus, bene 0.3 cm. longus. Ovarium trigonum, cum costa in lateribus, sparse furfuraceo-punctatum, c. 0.35 cm. longum; pedicellus 6-angulatus, parce furfuraceo-punctatus, 1.8 cm. longus.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 3, July—August 1914).

Another ally of *D. aprinum* J. J. S. but with the side lobes of the lip still smaller than in *D. aprinoides* J. J. S. and a very different midlobe.

Description from a specimen preserved in alcohol.

Dendrobium remotisepalum J. J. S. n. sp.

Tab. LVIII, 51.

Pusillum, dense caespitosum. Rhizoma abbreviatum, ramosum, radicibus elongatis. Pseudobulbi ovoidei ad elongato-ovoidei, subcylindrici, antice distincte longitudinaliter sulcati, carnosi, c. 0.7—1.25 cm. longi, 0.32 cm. diam., 1-folii. Folium erectum, subrecurvulum, lanceolatum, brevissime vel obsolete bidentatum cum apiculo multo longiore lateraliter compresso interposito, basi breviter petiolato-contractum; supra in utraque parte canaliculae longitudinalis convexum, subtus concavum carinatumque, rigide carnosum, supra subtusque sparse impresse atro-punctatum, c. 1.3—2 cm. longum, 0.3—0.46 cm. latum. Inflorescentiae 1—2 ante et pone folium, 1-florae, pedunculis brevibus, c. 0.25 cm. longis, nonnulis vaginulis tubulosis tenuibus ad c. 0.3 longis ad basin. Bractea minima, adpressa, triangula. Flos c. 0.66 cm. longus et latus, sepalis dorso atro-puncticulatis. Sepalum dorsale recurvum, cum ovario angulum acutum faciens, late semioblongum, subobtusum, basi latum, inferne convexum, superne concavum, 3-nervium, bene 0.3 cm. longum, 0.2 cm. latum. Sepala lateralia a sepalo dorsali remote inserta, cum pede gynostemii mentum reversum cum ovario angulum acutum faciens conicum subrectum obtusum dorso convexum c. 0.3 cm. longum formantia, parte antica reflexa, oblique subelliptica, satis obtusa, basi convexa, apice leviter concava, 3-nervia, margine antico bene 0.5 cm. longa, basi 0.175 cm., medio 0.27 cm. lata. Petala porrecta, basi gynostemio adpressa, divergentia, apice recurva, oblique lanceolato-rhombea, subspathulata, obtusiuscula, basi margine antico lacinia angusta fere 0.1 cm. longa ad pedem gynostemii decurrentia, 1-nervia, c. 0.3 cm. longa, fere 0.1 cm., basi 0.03 cm. lata. Labellum parallelum pedi gynostemii erectum, medio obtusangule recurvulum, spathulatum, subtus leviter sulcatum, 3-lobum, 3-nervium, explanatum c. 0.6 cm. longum, ad lobos laterales 0.32 cm. latum, ungue pedi gynostemii longitudine c. 0.1 cm. adnato, lineari-oblongo, subtus convexo, supra praesertim superne vix canaliculato, c. 0.24 cm. longo, 0.1 cm. lato; lobi laterales parvuli, erecti, gynostemio multo breviores, basi subtorti, subulati, subacuti, dorso leviter concavi, antice leviter convexi et inferne longitudinaliter carinati, carinis basi transverse dilatatis et ad basin lobi intermedii

incrassationem transversam antice leviter productam rotundato-quadrilobulatam formantibus; lobus intermedius conspicuus, obovato-orbicularis, apice subtruncato-rotundatus, crasse carnosus, disco magno triangulo incrassato medio leviter depresso, apice leviter concavus, subtus praesertim versus marginem leviter convexus, c. 0.3 cm. longus, 0.34 cm. latus. Gynostemium longiusculum, erectum, cum ovario angulum obtusum faciens, rectum, dorso convexum, subtus leviter concavum, medio leviter constrictum, marginibus superne paululum dilatatis et in utraque rostelli parte in dentem triangulum exeuntibus, infra stigma puberulum, c. 0.18 cm. longum, clinandrio excavato transverso semiorbiculari, filamento brevi dentiformi, auriculis triangulis obtusis concavis. Anthera cucullata, antice visa quadrangula angulis rotundata, apice tenuiter producta truncata papillosaque, infra 0.1 cm. lata. Pollinia 4, in corpuscula 2 oblique oblonga unita, lateraliter compressa, sublinearia, supra convexa, subtus plana, c. 0.05 cm. longa. Stigma obovatum, apice truncatum, basi subrotundatum. Pes gynostemii reversus, cum ovario angulum acutum faciens, oblongus, concavus, intus marginibus apiceque exceptis pubescens, c. 0.3 cm. longus. Ovarium curvatum, trigonum cum costula in lateribus, grossius furfuraceo-punctatum, c. 0.225 cm. longum; pedicellus angulatus, parcius punctatus, bene 0.9 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, east side, 1420 m., epiphytical in thin moss-grown *Vaccinium*-forest. (H. J. LAM n. 1433, 1 October 1920; "pseudobulbs light green, leaf dark green above, lighter beneath, flower white, lip dirty white").

Near *D. legareiense* J. J. S. but with smaller flowers, remotely inserted sepals, decurrent petals, longer and narrower side lobes united by a transverse bar, a rounded not retuse midlobe and the column 5-dentate at the apex.

Description from materials preserved in alcohol.

Dendrobium goliathense J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 7; in Nova Guinea XII (1913), 37, t. X, 28. — *Cadetia goliathensis* Schltr. Orch. D. N. Guinea (1912), 424.

Dutch New-Guinea; In the northern part, foot of Doorman-top, 3200 m., sheltered ravine with high Conifers, in moss-cushions. (H. J. LAM n. 1780, 29 October 1920; "whole flower light yellow or cream-colour").

Dendrobium subfalcatum J. J. S. in Fedde Rep. XII (1913), 30; in Nova Guinea XII (1916), 281, t. CII, 178.

Dutch New-Guinea: In the northern part, Mamberamo, Prauwen-bivouac, 90 m., border forest Meervlakte, epiphytical. (H. J. LAM n. 1118, 8 September 1920).

Dendrobium toadjanum J. J. S. in Fedde Rep. XII (1913), 30; in Nova Guinea XII (1916), 282, t. CIII, 179.

Dutch New-Guinea: In the northern part, without locality etc. (W. FEUILLETAU DE BRUYN n. 20). Mamberamo. (A. C. TH. THOMSEN n. 824, 13 August 1914). Same locality, near Prauwen-bivouac, 90 m., border forest Meervlakte, epiphytical. (H. J. LAM n. 1119, 8 September 1920).

Dendrobium Doormanii J. J. S. n. sp.

Tab. LIX, 52.

Rhizoma breve, radicibus tenuibus. Caules approximati, erecti, anguste clavati, acute quadrialati, sectione transversa rhombei, lateribus concavi, alis apicem versus sensim dilatatis, ala antica et interdum etiam postica dente obtuso lateraliter compresso terminata, c. 7.5—9 cm.

longi, apice 0.25 et 0.6 cm. diam., initio vaginis tubulosis inclusi, 1-folii. Folium sessile, subovato-lanceolatum, apice bidentatum, basi conduplicatum-rotundatumque, convexum, costa media supra sulcata subtus carinata, acute marginatum, rigide carnosum, c. 8 cm. longum, 1.9 cm. latum. Inflorescentia ante folium, fascicularis, spatha compressa ad basin, pedunculis brevibus 1-floris succedaneis. Flos mediocris, sepalis dorso sparse furfuraceo-punctículatis. Sepalum dorsale oblongum, inferne convexum, superne concavum cum marginibus anguste sed abrupte incurvis, obtusum, 5-nervium, c. 0.66 cm. longum, fere 0.3 latum. Sepala lateralia cum pede gynostemii mentum longum reversum calcariforme rectum leviter lateraliter compressum $^2/_5$ partibus superioribus conspicue attenuatum anguste obtusum c. 0.7 cm. longum formantia, parte libera oblique triangula, falcatula, obtusa, margine antico omnino margine postico apice tantum anguste incurva, 5-nervia, bene 0.6 cm. longa, 0.3 cm. lata. Petala oblique linearia, superne falcatula, obtusa, vix retusa, margine postico superne incurva, margine antico basi oblique dilatata decurrentiaque, 1-nervia, c. 0.6 cm. longa, medio 0.1 cm., basi 0.25 cm. lata. Labellum ungui pedi gynostemii adnatum, 3-lobum, 3-nervium, nervis exterioribus ramosis, lamina explanata ambitu suborbiculari, c. 0.55 cm. longa, 0.56 cm. lata; lobi laterales porrecti, paralleli, gynostemium aequantes, oblique late ovati, obtusi, concavi, c. 0.2 cm. longi et fere aequilati; lobus intermedius multo major, porrectus, recurvulus, marginibus incurvis concavus, subtus convexus cum sulco longitudinali in dimidia parte superiore, e basi late cuneata late rotundatus, transverse ellipticus, vix retusus, costis 5 longitudinalibus latis convexis sulcis separatis exterius decrescentibus, dentibus 2 patentibus approximatis conicis postice paululum decurrentibus ad basin lobi, glaber, carnosus, c. 0.34 cm. longus, 0.525 cm. latus. Gynostemium breve, rectum, a dorso compressum, quadratum, subtus leviter concavum papillosumque, c. 0.25 cm. longum, clinandrio excavato transverso apice obtuso, auriculis conspicuis parallelis, triangulis, apice subcontractis, anguste obtusis, concavis. Anthera cucullata, antice plana quadrangula, apice leviter producta rotundata papilloso-hirtella, dorso dilatata bilobaque, lobis divergentibus triangulis obtusis, c. 0.15 cm. lata. Pollinia 4, linearia, a latere visa anguste oblique triangula, vix 0.1 cm. longa. Stigma transverse ovale, margine superiore leviter excisum, margine inferiore truncatum. Pes gynostemii c. 0.7 cm. longus, basi gynostemio latiore concavus. Ovarium pedicellatum trigonum cum costis 3 prominentibus, c. 1.45 cm. longum.

Dutch New-Guinea: In the northern part, mountain-ridge c. 70 km. north of Carstensz-mountains, bivouac A, 800 m. (A. C. TH. DOORMAN n. 7, 3 September 1914; white with a violet spot on lip").

Near *D. lucidum* (Schltr.) J. J. S. and *D. Takadui* (Schltr.) J. J. S. but with larger flowers, a much longer mentum, 5 keels and 2 teeth on the midlobe of the lip. Also *D. toadjanum* J. J. S. is allied but well distinguished by the shape of the parts of the flowers.

Description from a specimen preserved in alcohol.

Dendrobium transversilobum J. J. S. in Bull. Dép. Agric. Ind. néerl. XXXIX (1910), 11; etc.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 20 m., forest. (A. C. TH. THOMSEN n. 705, 28 April 1914, n. 834, 1 September 1914; H. J. LAM nrs. 505 and 558, 1 July 1920; n. 623, March 1920).

Dendrobium infortunatum J. J. S. nom. nov. — *D. potamophila* J. J. S. in Bull. Jard. Bot. Buit. 2e sér. VIII (1912), 18. — *Cadetia potamophila* Schltr. Orch. D. N. Guinea (1912), 438.

The number of SCHLECHTER's book in which *D. potamophila* Schltr. was described, appeared 1 October 1912, whereas Bull. Jard. Bot. Buit. 2e sér. VIII was published in the course of October 1912. Hence *D. potamophila* Schltr. is valid and *D. potamophila* (Schltr.) J. J. S. ought to be changed.

Dendrobium apiculiferum J. J. S. in Fedde Rep. XII (1915), 396; in Nova Guinea XII (1916), 276, t. CI, 173.

Schouten-Islands: Island Biak, north coast, Warsa. (W. FEUILLETAU DE BRUYN n. 298, 12 August 1915).

Dendrobium opacifolium J. J. S. in Nova Guinea XII (1916), 279, t. CII, 176.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26 m. (A. C. TH. THOMSEN n. 628, 1 April 1914; n. 825, 13 August 1914). Same locality, 10 m., in forest. (H. J. LAM n. 454, 26 June 1920; n. 540, 4 July 1920; n. 585, 7 July 1920).

Sect. Diplocaulobium.

Dendrobium stelliferum J. J. S. n. sp.

Tab. LIX, 53.

Rhizoma repens et patens, ramosum, radicans, teres, c. 0.3 cm. diam., vaginis persistentibus mox exarescentibus tubulosis punctatis omnino obtectum. Pseudobulbi c. 1—1.5 cm. dissiti, basi rhizomati adpressi, recurvuli et cum rhizomate angulum acutum facientes, longe conici, inaequaliter sexangulati, lateribus obtusangule concavi, nitide virides, c. 1.5—2.2 cm. longi, 0.55—0.625 cm. diam., 1-folii. Folium lanceolatum, obtusum, aequaliter obtuse triangulo-bidentatum, basi petiolato-contractum, supra in utraque parte costae mediae canaliculatae convexum, subtus obtusangule convexum, rigidissime carnoso-coriaceum, viride, supra vix nitidulum, subtus opacum et paulo pallidius, totum c. 3—5 cm. longum, 0.925—1.225 cm. latum, petiolo c. 0.35—0.5 cm. longo. Inflorescentiae fasciculatae, 1-florae, in quoque bulbo plerumque 2 simultanee florentes, spatha lineari, straminea, c. 0.6—1 cm. longa, pedunculis albis, c. 0.5 cm. longis. Flos valde apertus, ephemerus, c. 2.6 cm. latus, sepalis petalisque albis, apice pallide flavescentibus, marcescentibus colorem non mutantibus. Sepalum dorsale porrectum, subrectum, e basi triangulo-dilatata lineare, anguste obtusum, canaliculatum, c. 1.8 cm. longum, basi 0.325 cm., medio 0.12 cm. latum. Sepala lateralia cum pede gynostemii mentum pedicello parallelum cum ovario angulum acutum faciens conicum leviter curvatum obtusum c. 0.7 cm. longum formantia, e basi valde oblique triangulo-dilatata linearia, falcata, subacuta, canaliculata, c. 1.8 cm. longa, basi 0.8 cm., medio 0.125 cm. lata. Petala basi gynostemio parallela, supra basin recurva, linearia, basi vix dilatata, acuta, c. 1.7 cm. longa, basi 0.175 cm., medio vix 0.1 cm. lata. Labellum erectum, recurvum, obsolete 3-lobum, 3-costatum, costis exterioribus usque ad $^2/_5$ partes supra basin rectis albis vix purpureo-suffusis deinde manifeste undulatis ultra medium lobi intermedii evanescentibus, costa media inferne humili in lobo medio elevata et undulata apicem haud attingente alba, costula brevi crenulata in basi lobi intermedii utrinque addita, explanatum infra medium constrictum, totum c. 1.6 cm. longum, hypochylio obovato, c. 0.75 cm. longo, 0.44 cm. lato, lobis lateralibus erectis, superne vix rotundatis, purpurascentibus, margine praesertim superne atropurpureo-maculatis, lobo intermedio medio recurvo, ovato, obtuso, apiculato, laxe undulato, crenulato-eroso, albo, medio flavo, c. 0.85 cm. longo, 0.55 cm. lato,

Gynostemium breve, latum, pallide flavescens, c. 0.2 cm. longum, filamento subulato, auriculis brevibus, late triangulis, denticulatis. Anthera cucullata, antice visa subobovata, basi leviter contracta retusaque, apice truncata, dilute flavo-viridis, c. 0.12 cm. lata. Pollinia 4, lateraliter compressa, late semiobovata, flava, 2 interiora quam exteriora extus convexa altiora. Stigma suborbiculare, apice truncatum. Pes gynostemii cum ovario angulum acutum faciens, leviter incurvulus, linearis, dorso convexus, dimidio superiore intus papillosus, ceterum margine papillosus, albidus, apicem versus purpureo-suffusus, apice flavescens, purpureo-marginatus, c. 0.67 cm. longus. Ovarium breve, obconicum, 6-sulcatum, virescenti-album, c. 0.15 cm. longum, cum pedicello albido 2.4 cm. longo angulum faciens.

Dutch New-Guinea: In the northern part. (K. GJELLERUP, without locality, cult. in Hort. Bog.). Mamberamo, Pionier-bivouac. (W. FEUILLETAU DE BRUYN, Mantri AJOEB, liv. pl. cult. in Hort. Bog. sub n. 4). Same locality, 26 m., epiphytical in forest. (A. C. TH. THOMSEN n. 805, August 1914.

Near *D. citrinicostatum* J. J. S., but with thicker pseudobulbs, broader leaf, larger flowers and the lip nearly without side lobes.

Description from living specimens.

Dendrobium cyclobulbon Schltr. Orch. D. N. Guinea (1912), 461; J. J. S. in N. Guinea XII (1916), 284, t. CIV, 180.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 10 m., epiphytical. (H. J. LAM n. 616, 14 July 1920; sterile).

Dendrobium Phalangillum J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 19; in N. Guinea VIII (1909), 58, t. XXI, 67; etc.

Dutch New-Guinea: In the northern part, Mamberamo near Prauwen-bivouac, 80 m., epiphytical in forest on stony hill. (H. J. LAM n. 956, 30 August 1920).

Dendrobium scotiiforme J. J. S. in Fedde Rep. XII (1913), 23; in Nova Guinea XII (1916), 290, t. CVI, 187.

var. **tenuifolium** J. J. S. n. var.

Differt a forma typica foliis paulo brevioribus et latioribus, tenuioribus, minus rigidis, dilutius viridibus et longius bidentatis.

Dutch New-Guinea: Upper Eilanden-river. (B. BRANDERHORST 1910, liv. pl. cult. in Hort. Bog. sub n. 284).

This differs slightly from the type in the leaves, and the somewhat narrower lip.

If the labels are reliable the type originates from the northern part, the variety from the southern part of New-Guinea.

Description from a cultivated specimen.

Dendrobium mamberamense J. J. S. n. sp.

Tab. LIX, 54.

Rhizoma breve, repens, ramosum, vaginis siccis tectum. Pseudobulbi approximati, ad c. 0.4 cm. distantes, e basi ovoidea dilute viridi c. 0.85—1.2 cm. longa 0.5—0.6 cm. diam. in collum tenue antice costatum apice non dilatatum dilute viride c. 2—8.5 cm. longum, 0.075—

0.12 cm. diam. contracti, 1-folii. Folium lineare, apice aequaliter 2-dentatum, dentibus triangulis, basi angustatum, basin versus angulato-concavum, superne in utraque parte costae mediae sulcatae convexum, subtus convexum, coriaceum, supra nitide atroviride, subtus opacum, c. 6—8.5 cm. longum, 0.4 cm. latum. Inflorescentiae fasciculatae, succedaneae, spatha anguste lineari, c. 1.2—1.5 cm. longa, pedunculis 1-floris, albis, c. 0.85 cm. longis. Flores mediocres, ephemeri, fere sine odore, sepalis petalisque albis, apice aureis, interdum inconspicue purpureo-punctatis, marcescentibus dilute purpureis apice obscure ochraceis. Sepalum dorsale e basi triangula longe lineari-angustatum, acutum, canaliculatum, c. 2.6 cm. longum, basi 0.34 cm., medio 0.08 cm. latum. Sepala lateralia cum pede gynostemii mentum conicum cum ovario angulum acutum fere rectum faciens leviter curvatum obtusum dorso convexum c. 0.6 cm. longum formantia, e basi oblique triangula anguste lineari-angustata, sigmoidea, acuta, canaliculata, c. 2.6 cm. longa, basi 0.65 cm., medio 0.075 cm. lata. Petala oblique anguste linearia, apice filiformia, $^1/_5$ parte apicali flava, c. 2.45 cm. longa, basi 0.13 cm. lata. Labellum erectum, superne valde recurvum, 3-lobum, costis 2 parallelis papillosis albis in basi lobi intermedii approximatis inclinatis contiguis cuniculum brevem formantibus in $^1/_4$ parte supra basin lobi intermedii utrinque in dentem falcatum porrectum exeuntibus, explanatum c. 1 cm. longum, hypochylio concavo, cuneato-obovato, basi dilute viridi, usque ad apicem loborum lateralium c. 0.55 cm. longo, 0.4 cm. lato; lobi laterales erecti, breves, basi lati, apice libero brevissimo obtuso, albi, atropurpuree marginati et transverse striati; lobus intermedius medio recurvus, ellipticus, marginibus convexus, leviter undulatus, apice marginibus incurvulis concavus, pulvino longitudinali convexo verrucuso flavo in $^3/_5$ partibus supra basin lobi medii terminante intus ante apicem costarum, pulvillo minuto villoso flavescenti-albo postposito, costa longitudinali verrucosa a basi fere usque ad medium lobi, centro flavo excepto albus, c. 0.5 cm. longus, 0.4 cm. latus. Gynostemium oblique conicum, dorso convexum, flavescenti-album, c. 0.25 cm. longum, clinandrio denticulato, filamento triangulo, auriculis triangulis, margine superiore denticulatis. Anthera cucullata, antice quinquangularis, apice paulo angustata, truncata et suberosula, alba, medio dilute flavo-viridis, bene 0.1 cm. lata. Pollinia 4, valde a latere compressa, oblique subsemiorbicularia, 2 interiora quam exteriora paulo longiora et latiora, flava. Stigma longitudinale, oblongum. Pes gynostemii linearis, leviter incurvulus, flavescens, longitudinaliter rubro-striatus, apice dilute viridis, bene 0.5 cm. longus. Ovarium 6-sulcatum, viridi-album, fere 0.3 cm. longum; pedicellus albus, c. 3.5 cm. longus.

Dutch New-Guinea: Mamberamo. (W. FEUILLETAU DE BRUYN 1914, AJOEB, liv. pl. cult. in Hort. Bog. sub n. 3; A. C. TH. THOMSEN n. 827, 13 August 1914).

In the characters of the flowers this is very similar to *D. scotiiforme* J. J. S., the vegetative organs, however, are very distinct. The stems are much longer, the leaves shorter, broader, not canaliculate but nearly flat and on both sides of the midrid convex, distinctly bidentate, lighter green.

Dendrobium hydrophilum J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 17; in N. Guinea VIII (1909), 56, t. XXI, 65; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 877, 18 September 1914; W. FEUILLETAU DE BRUYN n. 181, 2 November 1914). Pionier-bivouac. (H. J. LAM liv. pl. cult. in Hort. Bog. sub n. 173).

According to the label of the specimen cultivated in Buitenzorg sub n. 173 there has been collected herbarium of the same plant under n. 644. I did not see this.

Dendrobium tortitepalum J. J. S. n. sp.

Tab. LIX, 55.

Rhizoma breve, ramosum, vaginis tubulosis atrofusce maculatis. Pseudobulbi approximati, e basi fusiformi vel ovoideo-fusiformi nitide viridi c. 2.25—2.5 cm. longa 0.6—0.8 cm. diam. sensim vel subabrupte in collum tenue sectione transversali ovale antice costatum nitide dilute viride c. 4.5—13.5 cm. longum medio 0.17—0.25 cm. apice paulo dilatato 0.24—0.35 cm. latum attenuati, 1-folii, initio vaginis amplectentibus tubulosis superioribus acutis accrescentibus ad c. 4.25 cm. longis cincti. Folium erectum, leviter et sensim recurvulum, lanceolatum, aequaliter 2-dentatum, basi cuneato-angustatum, supra in utraque parte sulci longitudinalis plus minusve convexum, firmiter coriaceum, supra nitide viride, subtus opacum et costa media excepta pallide viride, c. 6.25—9.5 cm. longum, 1.6—2.1 cm. latum. Inflorescentia fascicularis, spatha compressa, acuta, straminea, c. 1.6—2 cm. longa, 0.275—0.37 cm. lata, pedunculis albidis, c. 0.6—1 cm. longis, vaginula tenera ad basin. Bractea minima, adpressa, triangula, alba. Flores 1—2 simul expansi, majusculi, ephemeri, sepalis petalisque superne semitortis, albis, apice pallide flavis, marcescentibus purpurascentibus apice dilute flavis ad ochrascentibus. Sepalum dorsale basi porrectum, adscendens, e basi triangula elongato-lineare, obtusum, canaliculatum, c. 3.3—4.3 cm. longum, basi 0.5 cm., medio 0.1 cm. latum. Sepala lateralia cum pede gynostemii mentum conicum cum ovario angulum acutum faciens distincte curvulum dorso convexum truncato-obtusum c. 0.675—0.7 cm. longum formantia, e basi valde oblique triangulo-dilatata longe lineari-angustata, supra basin falcata, canaliculata, c. 3.2—4 cm. longa, basi 0.9 cm., medio 0.1 cm. lata. Petala recurva, anguste linearia, sensim filiformi-angustata, c. 3.2—3.8 cm. longa, basi 0.23 cm., medio 0.07 cm. lata. Labellum erectum, arcuato-recurvum, 3-lobum, costis 2 parallelis usque infra basin lobi intermedii rectis deinde undulatis in basi lobi intermedii altioribus aliformibus irregulariter marginatis ultra medium lobi sensim evanescentibus, costula brevi utrinqne in basi lobi intermedii, incrassatione costiformi longitudinali convexa plus minusve verruculoso-rugolosa in $^1/_4$ parte supra basin usque ad apicem lobi, costis papillosis, explanatum totum c. 1.4—1.55 cm. longum, hypochylio late cuneato-obovato, basi dilute viridi, c. 0.67—0.825 cm. longo, 0,5—0.625 cm. lato; lobi latereles erecti, superne dilatati, rotundati, apice non vel vix producti, albi, striis atropurpureis margine confluentibus notati; lobus intermedius porrectus, recurvus, oblongus, basi vix angustatus, apice acutus subobtusus vel interdum 2-dentatus, superne cymbiformi-concavus et subtus convexo-carinatus, albus, parte mediana flavus, apice flavescens, omnino et etiam in hypochylio inter costas irregulariter atropurpureo-punctatus et maculatus, c. 0.73—0.75 cm. longus, 0.4—0.425 cm. latus. Gynostemium ovarium continuum, supra visum ovatum, dorso convexum, flavescens, c. 0.3 cm. longum, clinandrio crenulato, apice triangulo, auriculis oblique triangulis, acutis, margine superiore rectis erosulisque. Anthera cucullata, antice visa subsexangulata, dorso gibboso-rotundata, apice contracta vix producta truncata suberosula et albida, ceterum pallide viridis, c. 0.15 cm. lata. Pollinia 4, lateraliter compressa, semirotunda, exteriora quam interiora paulo longiora, pallide flavescentia. Stigma longitudinale, ovale. Pes gynostemii cum ovario angulum acutum faciens, incurvulus, late linearis, apice brevissime liber incurvus truncatus et dilute viridis, flavescenti-albus, purpureo-maculatus, c. 0.7 cm. longus.

Ovarium 6-sulcatum, pallide virescens, c. 0.4—0.5 cm. longum; pedicellus albidus, c. 3—3.5 cm. longus.

Dutch New-Guinea: In the northern part, Pionier-bivouac, Mamberamo. (W. FEUILLETAU DE BRUYN, 1914—1915, Mantri AJOEB, liv. pl. cult. in Hort. Bog. sub nrs. 10 and 80).

Though the thickened ridges of the lip are papillose a real cushion of clavate hairs is wanting. The two keels, which are much raised on the midlobe, are produced beyond the middle of it; between them, but on the midlobe only, is a narrow convex thickening reaching the apex, and at the base of the midlobe on both sides a short ridge.

In the shape of the lip it much resembles *D. vanilliodorum* J. J. S., which, however, has much narrower leaves.

Description from living plants.

Dendrobium Franssenianum J. J. S. in Meded. Herb. Leiden n. 23 (1915), 8; in Nova Guinea XII (1916), 289, t. CVI, 186.

Dutch New-Guinea: In the south-eastern part on the way to Mt. Goliath. (A. C. DE KOCK, 1911, liv. pl. cult. in Hort. Bog. sub n. 133).

The sepals and petals of a cultivated plant were white with the tips yellow purple, the side lobes of the lip white with transverse dark purple confluent bars, the midlobe yellow, yellowish white at the apex, and with a few dark purple dots, the column light yellow, the column foot pale yellow with longitudinal purple streaks, and a light green apex. They turn purple in fading and have a faint disagreeable odour.

Dendrobium pililobum J. J. S. in Fedde Rep. XII (1913), 34; in Nova Guinea XII, livr. IV, (1916), 293, t. CVII, 190.

Dutch New-Guinea: In the north-eastern part, Humboldt-Bay, Hollandia. (K. GJELLERUP, liv. pl. cult. in Hort. Bog. sub nrs. 312, 299, 330, 272, 227 = GJELLERUP n. 968).

Several plants of the numero's cited above have been in cultivation in the Botanic Gardens for a considerable time. Though rather variable in the form, especially in the breadth of the lip, I think it is impossible to distinguish varieties.

In n. 312, the type specimen, the midlobe is very narrow, 1.2 cm. long, 0.3 cm. broad at the base and 0.375 cm. over the broadened part of the limb, the total length of the lip being 2 cm.

In n. 299 the lip has nearly the same form as in n. 312, but it is broader; total length 1.5 cm., midlobe 0.8 cm. long, 0.43 cm. broad over the blade. The flower has the same pecular odour of cucumbers as in n. 312.

In n. 272 the midlobe is still broader and more abruptly dilated into the blade; total length of lip 1.75 cm., midlobe 0.95 cm. long, 0.425 cm. broad at the base, 0.65 cm. over the blade. The odour is much less strong than in nrs. 312 and 299.

In nrs. 330 and 227 finally the midlobe is almost not widened in the upper part; lip 1.37 cm. long, midlobe 0.67 cm. long, 0.44 cm. broad. The flowers are almost scentless.

The flowers turn purplish in fading.

The hypochyl is tapering gradually into the midlobe.

The species is near *D. aratriferum* J. J. S. but differs in the leaves having a longer narrowed base, and the shorter spathes.

When more materials are available it may turn out unavoidable to unite both species.

Dendrobium recurvifolium J. J. S. n. sp.

Tab. LX, 56.

Subcaespitosum. Rhizoma subpatens, valde ramosum, radicibus numerosis, tenuibus. Pseudobulbi numerosi, approximati, e basi tenuiter fusiformi c. 1.1—1.7 cm. longa 0.35—0.5 cm. diam. in collum tenue antice costatum c. 4.5—7.5 cm. longum 0.15—0.2 cm. apice 0.23—0.275 cm. latum contracti, nitide virides, 1-folii, pluribus vaginis sursum accrescentibus imbricantibus superioribus acutis usque ad c. 3.4 cm. longis initio ad basin. Folium erectum, supra basin valde recurvum, lanceolatum, apice subaequaliter triangulo-bidentatum, basi longe cuneato-angustatum, $^2/_5$—$^1/_2$ partibus inferioribus angulato-canaliculatum, costa media supra sulcata subtus non prominente, coriaceum, supra opacum, novellum nitidulum, dilute viride, subtus opacum pallide viride, c. 6.5—8.5 cm. longum, 1.4—1.6 cm. latum; vagina brevissima, initio viridi-flava, deinde sordide fusca. Inflorescentiae fasciculatae, 1-florae, spatha conduplicata, lineari, tenuiter membranacea, pallide straminea, c. 1.5—1.7 cm. longa, 0.225 cm. lata, mox fatiscente, pedunculis virescenti-albis, c. 0.95—1.1 cm. longis, nonnulis vaginulis teneris donatis. Flos mediocris, ephemerus, vix male odoratus, sepalis petalisque albis, apice aureis vix fuscescenti-suffusis, marcescentibus purpureis apice cupreis. Sepalum dorsale e basi oblongo-triangula lineari-angustatum, canaliculatum, c. 3.3—4.3 cm. longum, basi 0.5 cm., medio 0.125 cm. latum. Sepala lateralia cum pede gynostemii mentum rectum conicum cum ovario angulum subrectum formans truncatum c. 0.66 cm. longum facientia, e basi antice oblique dilatata triangula concava linearia, canaliculata, supra basin falcato-decurva, 5-nervia, c. 3.2—4 cm. longa, basi 0.8 cm., medio bene 0.1 cm. lata. Petala supra basin recurva, e basi lineari-lanceolata linearifiliformia, c. 3.1—3.9 cm. longa, basi 0.23 cm., medio 0.06 cm. lata. Labellum erectum, apice valde recurvum, 3-lobum, costis 2 parallelis, papillosis, in $^2/_5$ partibus supra basin magis elevatis approximatis et contiguis, deinde divergentibus et infra basin lobi intermedii obtuse terminantibus, explanatum c. 1.15—1.3 cm. longum, hypochylio angulato-obovato, c. 0.67—0.7 cm. longo, 0.6 cm. lato; lobi laterales erecti, basi latissimi, superne dilatati et rotundati, apice non producti, albi, late atropurpuree marginati et breviter transverse striati; lobus intermedius valde recurvus, marginibus incurvis concavus, undulatus, ovalis, rotundatus, dimidio inferiore pulvino villoso alto ovali abrupte terminante flavescenti-albo donatus, margine radiato-rugosus, praesertim inferne flavus, albo-marginatus, c. 0.54—0.675 cm. longus, 0.45—0.575 cm. latus. Gynostemium rectum, subconicum, dorso convexum, dilute flavum, c. 0.35—0.37 cm. longum, clinandrio excavato, denticulato, filamento subulato, auriculis multo brevioribus, antice in dentem minutum productis. Anthera cucullata, antice plana, basi contracta, apice producta et angustata, truncata, dilute flava, c. 0.16—0.17 cm. lata. Pollinia 4, a latere compressa, subsemiorbicularia, flava, c. 0.075 cm. longa. Stigma longitudinale, oblongum. Pes gynostemii cum ovario angulum subrectum faciens, rectus, apice brevissime incurvulus, linearis, truncatus, intus 3-costatus, dilute flavus, parce atropurpuree punctatus, apice dilute viridis, c. 0.6 cm. longus. Ovarium curvatum, 6-sulcatum, pallide flavoviride, c. 0.35—0.375 cm. longum; pedicellus virescenti-albus, c. 2.7—3.2 longus.

Dutch New-Guinea. (Cult. in Hort. Bog.).

The label has been wrongly copied so that the exact locality from where this plant was introduced, is unknown.

It differs from *D. aratriferum* J. J. S. and the allied species in the leaves being conspicuously recurved above the base, the ridges on the lip being contiguous in their upper part, the much raised haircushion on the midlobe, the anther narrowed at the apex.

Description from a living plant.

Dendrobium gibbiferum J. J. S. n. sp.

Tab. LX, 57.

Pseudobulbi e basi crasse fusiformi c. 2.1—2.2 cm. longa 0.85—0.9 cm. diam. in collum longum tenue basi teres superne antice carinatum apice vix dilatatum c. 1.1 cm. longum medio c. 0.2 cm. apice 0.27—0.3 cm. diam. contracti. Folium erectum, lanceolatum, apice alte aequaliter subacute bidentatum, basi brevissime contractum, convexum, costa media supra sulcata subtus prominula, coriaceum, c. 6.7—7 cm. longum, 1.8—2 cm. latum. Inflorescentiae fasciculatae, 1-florae, spatha conduplicata, lineari-lanceolata, c. 2—2.2 cm. longa, pedunculis 0,75 cm. longis. Flos magnus. Sepalum dorsale lineare, basi sensim dilatatum, concavum, 5-nervium, c. 5.5 cm. longum, basi c. 0.57 cm. latum. Sepala lateralia e basi oblique triangula linearia, concava, 5-nervia, 5.3—5.9 cm. longa, basi 1 cm. lata. Petala e basi oblique lineari filiformia, concava, 3-nervia, c. 5.25 cm. longa, inferne 0.225 cm. lata. Labellum erectum, in $^1/_3$ supra basin obtusangule, in $^1/_3$ infra apicem valde subrectangule recurvum, 3-lobum, inferne concavum, costis 2 parallelis rectis papillosis inter lobos laterales, explanatum panduratum, c. 1.6 cm. longum, hypochylio subobovato, c. 0.83 cm. longo, 0.625 cm. lato; lobi laterales erecti, basi latissimi, leviter rotundati, antice non producti et sinibus obtusangulis a lobo intermedio sejuncti; lobus intermedius porrectus, valde recurvus, magnus, ex ungue quadrangulo marginibus valde recurvo undulatoque c. 0.3 cm. longo 0.4 cm. lato in laminam suborbicularem rotundatam undulatam margine apicali incurvam c. 0.55 cm. longam 0.63 cm. latam dilatatus, pulvino villoso angusto lateraliter compresso medio altissimo in dimidio inferiore, erosulus, subtus infra pulvinum excavatus. Gynostemium oblique conicum, rectum, c. 0.4 cm. longum, clinandrio excavato, margine lacerato-dentato, filamento lineari, auriculas triangulas superante. Anthera cucullata, a dorso compressa, antice plana, dorso obtuse gibbosa, apice rotundato-truncata c. 0.175 cm. lata. Stigma longitudinale, oblongo-obovato-rhombeum. Pes gynostemii cum ovario angulum subrectum faciens, subrectus, apice incurvulus, linearis, obtusus, c. 0.75 cm. longus, Ovarium 6-sulcatum, c. 0.5 cm. longum; pedicellus teres, c. 4 cm. longus.

Dutch New-Guinea: Gautier Mts., c. 500 m., in forest on lime-stone and basalt. (K. GJELLERUP n. 852, November 1911). Cyclops Mts., c. 1500 m., in forest. (K. GJELLERUP n. 942, June 1911).

This appears to approach *D. recurvifolium* J. J. S. from which it is to be distinguished by the thicker pseudobulbs, broader leaves, larger flowers with the keels of the lip straight and the midlobe larger, broader and much contracted at the base.

Dr. K. GJELLERUP notes on the label of n. 852 that the leaves are slightly shining and dark green, the flowers pink with yellow tips, the central part of the lip yellow and the hypochylium with brown margins. I suppose that the flowers were withering when the plant was collected.

I think that n. 942 belongs here.

Description from a specimen preserved in alcohol.

Dendrobium schouteniense J. J. S. n. sp.

Tab. LXI, 58.

Pseudobulbi e basi crasse fusiformi c. 1.8—2.4 cm. longa 1—1.3 cm. diam. in collum antice costatum c. 1.5—8 cm. longum medio 0.25—0.27 cm. latum apice paulo dilatatum contracti. Folium erectum, fere rectum, anguste lanceolatum, fere aequaliter bidentatum, basi brevissime contractum, costa media supra sulcata subtus prominente, coriaceum, c. 5.4—9.8 cm. longum, 0.9—1.5 cm. latum. Inflorescentiae fasciculatae, spatha acuta, c. 2.2—2.4 cm. longa, pedunculis 1-floris, c. 1.5—1.7 cm. longis. Flores majusculi. Sepalum dorsale lineare, basin versus sensim dilatatum, canaliculatum, 5-nervium, c. 3.8—4.5 cm. longum, basi 0.43 cm., medio 0.13 cm. latum. Sepala lateralia cum pede gynostemii mentum rectum cum ovario angulum subrectum faciens obtusum retusum c. 0.6—0.63 cm. longum formantia, e basi oblique dilatata linearia, apicem versus sensim angustata, canaliculata, 5-nervia, c. 4.1—4.5 cm. longa, basi 0.85 cm. lata. Petala linearia, apicem versus filiformi-angustata, canaliculata, 3-nervia, c. 3.4—4 cm. longa, basi 0.2 cm. lata. Labellum curvatum, elongatum, angustum, 3-lobum, costis 2 simplicibus papillosis ante apicem loborum lateralium uniflexis in lobo medio submarginalibus medium lobi intermedii non attingentibus, basi 5-nervium, explanatum c. 1.95—2.1 cm. longum; lobi laterales erecti, late rotundati, apice non producti, hypochylium obovatum c. 0.7 cm. longum 0.55 cm. latum formantes; lobus intermedius elongatus, angustus, recurvulus, marginibus basi apiceque exceptis valde recurvis subtus fere contiguis convexus, linearis, apice subrhombeo-dilatatus, acuminatus et undulatus, margine angustissimo glabro excepto pilis clavatis velutinus, explanatus totus c. 1.25 cm. longus, basi 0.24 cm., infra apicem dilatatum 0.17 cm. latus, apice dilatato c. 0.4 cm. longo, 0.3 cm. lato. Gynostemium breve, crassum, oblique conicum, dorso convexum, subtus concavum, margine papillosum, c. 0.3 cm. longum, clinandrio alte excavato, margine utrinque 2-dentato, filamento subulato, auriculis oblique triangulis, acutis. Anthera cucullata, apice membranaceo-producta, subtruncata et breviter lacerata, margine laterali recurva, c. 0.15 cm. lata. Stigma suborbiculare. Pes gynostemii cum ovario angulum fere rectum faciens, rectus, apice brevissime liber et obtusangule incurvus, lineari-oblongus, truncatus, papillosus, c. 0.7 cm. longus. Ovarium 6-sulcatum, c. 0.5 cm. longum; pedicellus teres, c. 7.2—7.5 cm. longus.

Schouten Islands. (W. FEUILLETAU DE BRUYN, without number, 1916). Isle of Biak, north coast, Korim. (W. FEUILLETAU DE BRUYN n. 461).

In the shape of the lip this species closely resembles the type of *D. pililobum* J. J. S. It differs in the much longer spatha, the very convex midlobe abruptly widened into the hypochyl, the thick column and the very different anther.

The colour of the flowers is not noted.

Description from specimens preserved in alcohol.

In his "Report on the botany of the WOLLASTON expedition to Dutch New-Guinea, 1912—'13" (in Transact. Linn. Soc. 2nd ser. IX (1916), 177) H. N. RIDLEY mentions also *D. filiforme* J. J. S. (*Diplocaulobium filiforme* Krzl.). This is doubtless attributable to an incorrect determination as the species in question had been detected in North Selebes by the late Dr. R. SCHLECHTER as long ago as 1909.

Dendrobium carinulatidiscum J. J. S. n. sp.

Tab. LXI, 59.

Rhizoma breve, valde ramosum, initio vaginis versus pseudobulbos accrescentibus usque ad c. 2.75 cm. longis tectum. Pseudobulbi e basi fusiformi c. 2.5—5.25 cm. longa 0.8 cm. diam. in collum longum tenue antice costatum apice paulum dilatatum c. 5.75—15 cm. longum medio bene 0.2 cm. latum contracti, 1-folii. Folium erectum, lanceolatum, apice aequaliter obtuse triangulo-bidentatum, basi sensim cuneato-angustatum, costa media supra sulcata subtus vix prominente, firmiter coriaceum, c. 6—8.5 cm. longum, 1.4—1.1 cm. latum. Inflorescentia fascicularis, spatha a latere compressa, lanceolata, acuta, c. 1.5—2.2 cm. longa, pedunculis 1-floris, c. 0.9—1.3 cm. longis, basi nonnullis vaginulis tubulosis tenuiter membranaceis donatis. Bractea minima, adpressa, late triangula. Flos majusculus. Sepalum dorsale e basi triangula longe lineari-caudatum, anguste obtusum, canaliculatum, 5-nervium, c. 4 cm. longum, basi 0.525 cm., in $^1/_3$ supra basin 0.15 cm. latum. Sepala lateralia cum pede gynostemii mentum conicum truncatum cum ovario angulum subrectum faciens supra basin incurvulum c. 0.83 cm. longum formantia, falcato-decurva, e basi breviter oblique triangula longe lineari-caudata, canaliculata, 5-nervia, c. 3.9—4.1 cm. longa, basi bene 1 cm., in $^1/_3$ supra basin 0.175 cm. lata. Petala e basi oblique lineari filiformi-angustata, acuta, canaliculata, 3-nervia, c. 3.85 cm. longa, basi 0.23 cm., in $^1/_3$ supra basin fere 0.1 cm. lata. Labellum parallelum pedi gynostemii erectum, in $^1/_3$ supra basin obtusangule in $^2/_3$ supra basin subrectangule recurvum, 3-lobum, hypochylio concavum, costis 2 longitudinalibus usque ad $^1/_3$ supra basin parallelis rectis crassis papillosis deinde altioribus tenuioribus conspicue undulatis in $^3/_5$ partibus supra basin labelli in parte longitudinaliter verruculoso-carinulata satis abrupte evanescentibus, in basi lobi intermedii inter costas puberulum, 5-nervium, explanatum ambitu lanceolatum, c. 1.85 cm. longum, hypochylio subcuneato-obovato, c. 0.75 cm. longo, bene 0.6 cm. lato; lobi laterales erecti, brevissimi, antice vix producti, subrotundati, antice repandulo-crenulati; lobus intermediis oblongo-ovatus, acutus, dorso ad apicem carinatus, carina in dentem conspicuum acutum producta, eo apice superposito-bidentatus, inferne undulatus et repandulo-crenulatus, superne repandulo-denticulatus, c. 1.1 cm. longus, 0.54 cm. latus. Gynostemium oblique conicum, c. 0.25 cm. longum, apice triangulo, clinandrio excavato, auriculis parellelis, triangulis, margine postico denticulatis. Anthera cucullata, antice visa subquadrata vel melius subquinquangulata, apice truncata, c. 0.15 cm. lata. Pollinia 4, lateraliter compressa, oblique semiorbicularia ad semiovalia, 2 intermedia altissima, c. 0.1 cm. longa. Stigma longitudinale, ovale. Pes gynostemii cum ovario angulum acutum faciens, supra basin incurvulus, ceterum subrectus, linearis, truncatus, bene 0.8 cm. longus. Ovarium 6-sulcatum, c. 0.45 cm. longum; pedicellus teres, c. 4.5—5.7 cm. longus.

Dutch New-Guinea: In the northern part, Mamberamo near Pionier-bivouac, 70 m., epiphytical. (H. J. Lam n. 448, 28 June 1920; "sepals and petals white with yellowish green tips, lip with a yellow centre and purple veined margins, column yellow, ovary yellowish white").

In the shape of the midlobe of the lip resembling *D. Janowskyi* J. J. S., in other respects, however, quite distinct.

Description from herbarium and materials preserved in alcohol.

Dendrobium centrale J. J. S. in Bull. Dép. Agr. Ind. néerl. XLV (1911), 3; in Nova Guinea VIII (1911), 550, t. LXXXVIII A.

Pseudobulbi approximati, validi, e basi incrassata sensim attenuati, apice conspicue dilatati, sicco nitide fusco-nigri, c. 68—76 cm. longi, vaginis usque ad 14 cm. longis ad basin, 1-folii. Folium lineari-lanceolatum, apice bilobulum, basi conduplicatum, sicco rigidule coriaceum, c. 16—20 cm. longum, 1.85—2.2 cm. latum. Sepalum dorsale lanceolatum, obtusiusculum, 7-nervium, c. 4 cm. longum, bene 1 cm. latum. Sepala lateralia oblique lanceolata, acuta, margine antico basi leviter rotundato-dilatata, basi concava, 7-nervia, c. 4 cm. longa, c. 1 cm., basi fere 1.1 cm., supra basin 0.85 cm. lata. Petala oblique oblongo-subelliptica, breviter acute triangulo-acuminata, basin versus subspathulato-angustata, 3—5-nervia, c. 3.9 cm. longa, 1.6 cm., basi 0.425 cm. lata. Labellum supra basin recurvulum, 3-lobum, costis 2 longitudinalibus altis ad basin lobi intermedii in lobulum obtusum falcato-decurvum terminantibus, basi etiam in costis papillosum, nervis 5 ramosis, explanatum c. 1.9 cm., usque ad apicem loborum lateralium 1.2 cm. longum, fere 1.1 cm. latum; lobi laterales erecti, porrecti, apice incurvi, margine antico recurvi, oblique triangulo-oblongi, obtusi, basi rotundati, parte antica c. 0.4 cm. longi et fere aequilati; lobus intermedius porrectus, basi carnosa leviter concavus, margine angusto recurvulus, subtus convexus, intus papillosus, parte antica multo majore tenuis, supra convexus, subtus concavus, lanceolatus, marginibus subparallelis, $^2/_5$ partibus anticis triangulo-angustatus, acutus, bene 1 cm. longus, fere 0.4 cm. latus. Gynostemium crasse conicum, dorso satis angustum angulatumque, marginibus anticis rotundatum, subtus canaliculatum papillosumque, c. 0.46 cm. longum, clinandrio transverse ovali excavato, apice triangulo denticulato, auriculis brevibus transverse quadrangulis denticulatis. Anthera cucullata, quadrangula, antice longitudinaliter bicanaliculata, apice leviter rotundato-triangulo-producta papillosaque, 0.2 cm. lata. Pollinia 4, una subrhombea, obtusangule triangula, bene 0.18 cm. longa. Stigma alte excavatum, longitudinale, lineare, basin gynostemii fere attingens. Pes gynostemii cum ovario angulum subrectum faciens, incurvus, oblongus, truncatus, intus papillosus, $^2/_3$ partibus superioribus longitudinaliter convexo-tricostatus, c. 0.8 cm. longus. Ovarium 6-sulcatum, c. 0.9 cm. longum; pedicellus teres, 27 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1780 m., epiphytical in moss-grown forest. (H. J. LAM n. 1916, 8 November 1920; "stems dark brown, yellowish green when young, sheaths greenish brown, greenish yellow when young, sepals red or rose coloured, sometimes here and there white, petals white, sometimes tinged with rose-colour, lip dirty rosy with a white apex, column pale yellow with a cream-coloured apex, ovary rose-coloured, rosy-yellow or greenish yellow tinged rosy, pollinia white").

Better materials enable me to give a more elaborate description of this species. The flower described is one of the larger ones at hand.

Description from herbarium and flowers preserved in alcohol.

Sect. Desmotrichum.

Dendrobium comatum Lndl. Gen. et sp. Orch. 76; etc.

var. **papuanum** J. J. S. in Nova Guinea VIII (1911), 551; etc.

Schouten Islands: Island Biak, northern coast, Korim, growing in full sun. (W. FEUILLETAU DE BRUYN n. 433, 10 October 1915).

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 10 m., epiphytical. (H. J. LAM n. 644, July 1920).

Dendrobium rhipidolobum Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee 151; etc.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26 m. (A. C. TH. THOMSEN n. 804, 1914, without date; W. FEUILLETAU DE BRUYN n. 184, 5 November 1914).

Dendrobium simplicicaule J. J. S. n. sp.

Tab. LXI, 60.

Rhizoma elongatum, repens, ramosum, radicans, teres, dilute viride, nitidum, c. 0.2 cm. diam., initio vaginis tubulosis mox exarescentibus et evanescentibus tectum, vagina ultima caulem magnam partem amplectente. Caules c. 2.5—5 cm. dissiti, cum rhizomate angulum acutum facientes, simplices, clavati, compressi, 4-nodi, dilutius virides, nitidi, c. 3.75—6.75 cm. longi, 1-folii, internodiis 3 inferioribus tenuibus, sectione transversa ellipticis, superne paulo dilatatis, internodio ultimo valde compresso, oblongo, obtuso, c. 2.25—3.5 cm. longo, 0.85—1.1 cm. lato. Folium ovato-lanceolatum, apice triangulo-bidentatum cum mucrone subulato inter dentes, basi brevissime contractum et semitortum, costa media supra sulcata subtus prominente, nervo marginali subtus prominente utrinque, coriaceum, supra atroviride, subopacum, subtus dilute viride, opacum, c. 5.5—7.75 cm. longum, 1.6—2.1 cm. latum. Inflorescentia ad apicem caulis pone folium, abbreviata, 1-flora, squamis siccis mox fatiscentibus ad basin, pedunculo brevissimo. Flos mediocris, subsemipellucidus, flavescenti-albus, vix odoratus, sepalis petalisque recurvis, sepalis dorso minute furfuraceo-punctatis. Sepalum dorsale oblongo-triangulum, sensim acuminato-angustatum, conico-acutum, 7-nervium, c. 1.3 cm. longum, 0.425 cm. latum. Sepala lateralia cum pede gynostemii mentum incurvulum cum ovario angulum acutum faciens conicum obtusissimum c. 0.7 cm. longum formantia, margine antico omnino libera et basi oblique triangulo-dilatata, oblique triangula, sensim longius acuminata, acuta, inferne convexa, apice concava, 7-nervia, c. 1.3 cm. longa, basi 0.95 cm. lata. Petala medio recurva, oblique linearia, superne angustata, acuta, convexa, superne leviter concava, 3-nervia, c. 1.2 cm. longa, 0.175 cm. lata. Labellum erectum, supra basin medio et infra apicem leviter obtusangule recurvum, 3-lobum, album, basi dilute viride, apice pallide flavescens, intus 5-costatum, costis exterioribus et intermedia basin non attingentibus, omnibus fere ad apicem productis, costa intermedia humili in apice lobi intermedii repanda, ceteris inferne rectis infra basin lobi intermedii alato-dilatatis undulatis et pallide viridi-marginatis, 2 exterioribus extrorsum jacentibus pseudomarginalibus marginem valde reflexum occultantibus, explanatum c. 1.4 cm. longum, hypochylio (cum lobis lateralibus) cuneato-triangulo, c. 0.7 cm. longo, 0.97 cm. lato; lobi laterales erecti, apice incurvi, extus convexi, oblique trianguli, obtusi; lobus intermedius oblongus, obtuse apiculatus, subtus marginibus recurvis exceptis convexus, c. 0.7 cm. longus, c. 45 cm. latus. Gynostemium a dorso compressum, album, c. 0.3 cm. longum, filamento subulato, auriculis inaequaliter quadrangulis, oblique truncatis, subretusis. Anthera cucullata, antice quadrata, apice truncata et papillosa, alba, c. 0.16 cm. lata. Pollinia 4, linearia, supra convexa, subtus concava, dilute flava, subsemipellucida. Stigma rotundato-quadratum. Pes gynostemii cum ovario angulum acutum faciens, incurvus, obtusus, concavus cum sulcis longitudinalibus, albus, apice dilute

viridis, c. 0.7 cm. longus. Ovarium 6-sulcatum, curvatum, flavescens, dense furfuraceo-punctatum, c. 0.5 cm. longum.

Dutch New-Guinea: In the southern part, Noord-river, Alkmaar-hills. (Expedition LORENTZ 1909, RACHMAT, liv. pl. cult. in Hort. Bog. sub n. 459 R). In northern part, Mamberamo, Pionier-bivouac. (H. J. LAM 1920, liv. pl. cult. in Hort. Bog. sub n. 234).

This is a very distinct species of the *Desmotrichum*-section with a long creeping rhizome and unbranched stems.

Description from living specimens.

Sect. Rhopalanthe.

Dendrobium Mac Farlanei F. v. Muell. et Krzl. Descr. notes Pap. pl. II, 29; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 134, 5 October 1914). Pionier-bivouac, 10 m., forest. (H. J. LAM n. 603, July 1920; also cult. in Hort. Bog. sub n. 178).

Sect. Aporum.

Dendrobrium pseudocalceolum J. J. S. in Bull. Dép. Agr. Ind. néerl. V (1907), 34; in Ic. Bog. III (1907), 97, t. CCXL.

Dutch New-Guinea: In the northern part, Mamberamo. (A.C. TH. THOMSEN n. 823, 13 August 1914).

Dendrobium inconspicuum J. J. S. in Gibbs Fl. Arfak Mount. (1917), 205.

Tab. LXII, 61.

Schouten Islands: Biak, north coast, Korim, beach in full sun. (W. FEUILLETAU DE BRUYN n. 447, without date).

Sect. Monanthos.

Dendrobium poneroides Schltr. in Fedde Rep. X (1911), 251; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 843; W. FEUILLETAU DE BRUYN n. 177, 24 October 1914). As quoted, Casuaris-hill near Prauwen-bivouac, 200 m., cut open forest. (H. J. LAM n. 1072, September 1920).

Dendrobium piestocaulon Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 173; etc.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26 m., forest. (A. C. TH. THOMSEN nrs. 644, 706, 3 and 28 April 1914).

var. **kauloense** Schltr. Orch. D. N. Guinea (1912), 632.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 174, 24 October 1914). As quoted, near Pionier-bivouac, 10 m., epiphytical. (H. J. LAM n. 604, July 1920).

Dendrobium erectifolium J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 16; in N. Guinea VIII (1909), 76, t. XXVI, 84; 566, t. XCIII A; KRZL. in Pflanzenr. Heft 45, 163.

Dutch New-Guinea: In the northern part, near Doorman-river, 200 m., epiphytical in forest (H. J. LAM n. 1351, September 1920).

Sect. Grastidium.

Dendrobium quinquecaudatum J. J. S. n. sp. — *D. acuminatissimum* Lndl. var. *latifolium* J. J. S. in N. Guinea VIII (1911), 553.

Tab. LXII, 62.

Dutch New-Guinea: In the western part, Etna-bay. (J. W. R. KOCH n. 87, 1904—'05). In the northern part, Humboldt-bay, Hollandia, 10 m., epiphytical in forest. (K. GJELLERUP n. 301 (type), 8 August 1910; "white with a purple spot at the top of the mentum;" also liv. pl. cult. in Hort. Bog. sub n. 359). Mamberamo, Pionier-bivouac, 26 m., epiphytical in forest. (A. C. TH. THOMSEN n. 713, 8 May 1914; "flowers white"; W. FEUILLETAU DE BRUYN n. 173, 4 October 1914).

This plant is specifically distinct from *D. acuminatissimum* Lndl.

Dendrobium acuminatissimum Lndl. Gen. et sp. Orch. (1830), 86; etc.

var. **mamberamense** J. J. S. n. var.

Differt a forma typica caulibus foliisque minoribus, floribus aequimagnis sed tenerrimis, mento breviore, spathis multo angustioribus.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 10 m., epiphytical. (H. J. LAM n. 614, 14 July 1920; "leaves thin, light green, sepals and petals white, lip with spur light salmon-coloured, bordered red in the middle, apex light yellow, column red and white, ovary greenish white, flowers slightly odoriferous").

I have provisionally described this as a variety of *D. acuminatissimum* Lndl. The whole group of species allied to *D. acuminatissimum* Lndl. wants revision.

Dendrobium polyschistum Schltr. Orch. D. N. Guinea (1912), 575.

var. **marginatum** J. J. S. n. var.

Tab. LXII, 63.

Caules c. 20 cm. longi, internodiis ad c. 2.8 cm. longis. Folia linearia, apicem versus paululum angustata, inaequaliter obtuse bidentata, dentibus apice subserrulatis, basi cuneato-angustata, nervis 3 majoribus 2 minoribus, rigide tenuiter coriacea, ad c. 7.5 cm. longa, sicco bene 0.4 cm. lata; vaginae tubulosae, internodia vix superantes, tenuiter longitudinaliter prominule striatae et minute verruculoso-punctatae, apice laminae opposito dente adpresso conspicuo triangulo satis acuto instructae. Inflorescentiae 2 vaginas perforantes, erecto-patentes, biflorae, pedunculo c. 0.4 cm. longo, vaginula exteriore semiorbiculari, sequente longiore ad c. 0.4 cm. longa. Flores mediocres. Sepalum dorsale e basi oblongo-triangula lineari-caudatum, valde canaliculatum, 5-nervium, c. 2 cm. longum, basi 0.36 cm., medio 0.07 cm. latum. Sepala lateralia e basi oblique triangula lineari-caudata, valde canaliculata, falcatula, 5-nervia, c. 2 cm. longa, basi 0.58 cm. lata. Petala e basi oblique lineari canaliculato-filiformi-producta, 3-nervia, c. 1.95 cm. longa, inferne 0.13 cm. lata. Labellum supra basin recurvum, 3-lobum, 5-nervium, costa longitudinali simplici glabra ante basin laminae lobi intermedii in dentem porrectum acutum terminante, basi utrinque costula brevissima addita, explanatum c. 0.825 cm., usque ad apicem loborum lateralium bene 0.5 cm. longum, ad lobos laterales 0.375 cm. latum; lobi laterales erecti, falcato-incurvi, oblique trianguli, antice longe anguste producti, acuti, margine exteriore superne suberosuli, intus versus basin nonnulis incrassationibus longitudinalibus ornati; lobus intermedius ex ungue quadrato breviter patenter lacerato intus utrinque lamella longi-

tudinali irregulariter lacinulata donato c. 0.175 cm. longo fere 0.2 cm. lato abrupte in laminam breviter lateque triangulam utrinque in lacinias satis paucas patentissimas longas inaequales subulato-filiformes superne partim subcrenulatas fissam apice longius acute subulato-acuminatam medio parcius muricibus filiformibus subclavatis longis vestitam bene 0.3 cm. longam 0.575 cm. latam dilatatus. Gynostemium rectum, a dorso compressum, dorso convexum, marginibus in utraque stigmatis parte leviter obtusangule dilatatum, absque anthera c. 0.325 cm. longum, apice 3-lobulum, lobulo postico aequilateratiter trapeziformi breviter 3-dentato, dente intermedio brevi obtuso, exterioribus acutiusculis, lobulis lateralibus (auriculis) triangulis, acuminatis, margine postico interdum dentiferis. Stigma transversum (fecundatum). Pes gynostemii cum ovario angalum acutum faciens, rectus, apice tantum incurvus, late linearis, truncatus, apice incurvo excavato cum lateribus crassis et costula longitudinali, ante excavationem calliformis, c. 0.45 cm. longus. Ovarium 6-sulcatum pedicellatum c. 1.1 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., slope to the north, epiphytical. (H. J. LAM n. 1499, 4 October 1920; "roots greenish white, leaves dull green tinged a little violet above, sepals and petals dirty rosy with a little green and violet, lip pale yellow with a light yellow apex, the side lobes thinly bordered violet, column greenish yellow with a violet apex, the foot violet with a yellow apex, ovary dirty rosy").

I believe this to be a form of *D. polyschistum* Schltr., though I have not seen specimens of that species. It is also near *D. dionaeoides* J. J. S.

Description from two dried branchlets and a single flower preserved in alcohol.

Dendrobium nimium J. J. S. n. sp.

Tab. LXIII, 64.

Caules elongati, pars adest c. 17 cm. longa, internodiis ad c. 0.8 cm. longis, superioribus descrescentibus. Folia erecto-patentia, sessilia, oblongo-ovata, subcordata, apice oblique breviter obtuse bilobula, basi utrinque rotundata, margine in sicco recurvula, costa media supra sulcata subtus prominula, rigide tenuiter coriacea, ad c. 3.2 cm. longa, 1 cm. lata (sicco); vaginae tubulosae, apice obliquae, longitudinaliter prominenter nervosae, dente late triangulo laminae opposito instructae, internodia superantes. Inflorescentiae e nodis caulium foliatorum, vaginas 2 perforantes, brevissimae, erecto-patentes, 2-florae, pedunculo c. 0.6 cm. longo, vaginulis lateraliter compressis obtusis ad c. 0.5 cm. longis. Flores mediocres. Sepalum dorsale elongato-lineare, marginibus superne incurvis, 5-nervium, c. 2.55 cm. longum, 0.2 cm. latum. Sepala lateralia cum pede gynostemii mentum rectum cum ovario angulum acutum fere rectum faciens obtusum c. 0.4 cm. longum formantia, e basi conspicue oblique triangulo-dilatata elongato-linearia, inferne falcata, marginibus incurvis superne tenuiter tubulosa, 5-nervia, c. 2.35 cm. longa, basi 0.6 cm. lata. Petala oblique lineari-filiformia, marginibus superne incurvis, 3-nervia, c. 1.9 cm. longa, basi fere 0.1 cm. lata. Labellum erectum, recurvum, 3-lobum, 3-nervium, costa longitudinali inter lobos laterales, explanatum e basi unguiculata cuneato-dilatatum, ovato-rhombeum, totum c. 1.3 cm., usque ad apicem loborum lateralium 0.75 cm., usque ad apicem lobulorum lateralium lobi intermedii c. 0.9 cm. longum, 0.35 cm. latum, ungue 0.25 cm. longo; lobi laterales erecti, falcatulo-incurvi, porrecti, trapezoidei, apice producti, acuti, margine exteriore irregulares, parte libera c. 0.23 cm. longi; lobus intermedius porrectus, e basi contracta ovatus, patentissime subulato-lacinulatus, lacinulis superne decrescentibus, apice trifidus, laciniis exte-

rioribus porrectis anguste triangulis acutis apici loborum lateralium similibus margine exteriore irregulariter marginatis, lacinia intermedia multo longiore filiformi, totus c. 0.85 cm. longus, 0.275 cm. latus, seta 0.5 cm. longa. Gynostemium a dorso compressum, dorso convexum, c. 0.3 cm. longum, clinandrio excavato, filamento subulato-dentiformi, auriculas conspicuas latas obtusas apice erosulas concavas aequante. Anthera cucullata, apice paulo producta, rotundato-truncata. Stigma conspicuum, fere totam faciem inferiorem gynostemii occupans, basin attingens, concavum. Pes gynostemii cum ovario angulum acutum fere rectum faciens, linearis, rectus, c. 0.4 cm. longus. Ovarium obconicum, cum pedicello c. 0.8 cm. longum.

Schouten Islands: Biak, north coast, Warsa, growing in full sun. (W. FEUILLETAU DE BRUYN n. 366, 21 August 1915).

Differing from all other species of the group in the curious lip ending in a long thread-like appendix.

Description from two small dried portions of a stem.

Dendrobium subtricostatum J. J. S. n. sp.

Tab. LXIII, 65.

Caules elongati, tenues, sectione transversa elliptici, foliati, c. 0.2 cm. lati, internodiis c. 2.7 cm. longis. Folia linearia, apicem versus angustata, oblique obtuse bidentata, basi cuneato-angustata, costa media supra sulcata subtus prominula, nervis 2—3 utrinque, coriaceo-papyracea, bene 8 cm. longa, 0.55 cm. lata; vaginae tubulosae, internodia superantes, sectione transversa ellipticae, superne praesertim in 4 angulis transverse ruguloso-verruculosae, apice dente conspicuo triangulo obtuso laminae opposito instructae, bene 0.2 cm. latae. Inflorescentiae e nodis caulium foliatorum, vaginas 2 perforantes, brevissimae, 2-florae, pedunculo valde lateraliter compresso c. 0.6 cm. longo, vaginula exteriore abbreviata rotundata lateraliter compressa c. 0.1 cm. longa, ceteris longioribus oblongis c. 0.4—0.5 cm. longis. Bracteae parvae, adpressae, triangulae, obtusae. Flores mediocres, suboppositi vel alterni, carnosuli. Sepalum dorsale oblongo-triangulum, longe canaliculato-acuminatum, anguste obtusiusculum, 5(—7)-nervium, totum bene 1.8 cm. longum, 0.66 cm. latum, apice 0.55 cm. longo. Sepala lateralia cum pede gynostemii mentum obtusum retusum cum ovario angulum obtusum faciens dorso ad basin longitudinaliter tricostatum apice longitudinaliter sulcatum c. 0.82 cm. longum formantia, falcato-triangula, apice canaliculato-angustata, margine antico basi oblique dilatata, concava, dorso medio longitudinaliter obtusangule incrassata, 5-nervia, c. 1.625 cm. longa, basi 1.1 cm. lata. Petala oblique lineari-lanceolata, sensim subacuminata et superne more sepalorum incrassatula, falcatula, concava, apice canaliculata, dorso convexa, 3-nervia, c. 1.55 cm. longa, 0.33 cm. lata. Labellum erectum, recurvum, 3-lobum, inexplanatum c. 1.1 cm. longum, costa conspicua inferne valde angustata infra apicem utrinque nonnullis lacinulis triangulis acuminatis porrectis donata dorso applanata a basi usque infra basin lobi intermedii, costula minima utrinque ad basin addita, intus sparsim muriculato-papillosum, explanatum cuneato-flabellatum, c. 1.2 cm., usque ad apicem loborum lateralium bene 1 cm. longum, 1.23 cm. latum; lobi laterales erecti, falcatulo-incurvi, oblique trianguli, acuti, undulati, margine antico parce irregulariter serrulati, parte antica c. 0.37 cm. longa; lobus intermedius recurvus, transverse quadrangulus, apice sensim in lobulum brevissimum late triangulum productus, irregulariter lacinulato-serrulatus,

c. 0.4 cm. longus, 0.7 cm. latus. Gynostemium conicum, vix sigmoideum, apice contractum, dorso convexum, in utraque stigmatis parte marginibus leviter rotundato-dilatatis, absque anthera 0.3 cm. longum, clinandrio alte excavato semiorbiculari, filamento dentiformi, auriculis triangulis obtusis concavis. Anthera cucullata, antice visa semiovalis, apice vix producto subangustata truncataque, connectivo dorso leviter costulato-incrassato, c. 0.17 cm. lata. Stigma quinquangulare. Pes gynostemii cum ovario angulum obtusum faciens, supra basin subincurvulus, oblongus, truncatus, marginibus elevatis leviter canaliculatus, apice inconspicue excavatus et sulcis longitudinalibus leviter costulatus, c. 0.825 cm. longus. Ovarium 6-sulcatum, c. 0.3 cm. longum; pedicellus 0.6 cm. longus.

Dutch New-Guinea: In the northern part, mountain-ridge c. 70 km. north of Carstensz-mountains. (L. A. C. M. DOORMAN nrs. 30 and 31; "cream-colour with yellow or brown tips; lip light yellow").

In the form of the lip this resembles *D. sarcophyllum* Schltr., but for the rest it is quite distinct.

Description from poor material preserved in alcohol.

Dendrobium vandoides Schltr. Orch. D. N. Guinea (1912), 603.

Tab. LXIII, 66.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 10 m., epiphytical in forest. (H. J. LAM n. 646, 17 July 1920; "2 m. high, sepals and petals light cream-colour, punctate violet at the base in- and outside, lip light yellow, column dark violet and white, flowers opening in the evening").

Dendrobium ostrinum J. J. S. in Bull. Dép. Agric. Ind. néerl. XXXIX (1910), 10; in Nova Guinea VIII (1911), 556, t. XC A; etc.

var. **ochroleucum** J. J. S. in N. Guinea XII (1913), 51.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26 m., epiphytical in forest. (A. C. TH. THOMSEN n. 702, 24 April 1914; n. 807, 7 August 1914; n. 888, 22 September 1914; H. J. LAM nrs. 624, 625, 626, 15 July 1920; also liv. pl. cult. in Hort. Bog. sub n. 193).

Dendrobium subelobatum J. J. S. n. sp.

Tab. LXIII, 67.

Rhizoma abbreviatum, ramosum. Caules approximati, elongati, sectione transversa crasse elliptici, nitidi, ad c. 65 cm. longi, foliati, internodiis c. 1.5—1.9 cm. longis, basi paulo attenuatis, ad c. 0.26 cm. latis. Folia erecto-patentia, lanceolata, apicem versus angustata, inaequaliter obtuse bidentata, basi angustata, costa media sicco supra sulcata subtus prominente, nervis sequentibus supra subtusque prominentibus, sicco rigide papyraceo-coriacea, c. 3.75—6 cm. longa, 0.75—1.3 cm. lata; vaginae tubulosae, internodia plerumque paulum superantes, dente conspicuo adpresso erecto quadrangulo apicem versus paulum angustato truncato sicco ruguloso c. 0.25—0.3 cm. longo ad apicem vaginae laminae opposito. Inflorescentiae ad nodos, vaginas 2 perforantes, brevissimae, pedunculo abbreviato, vaginulis brevissimis incluso. Flores parvuli. Sepalum dorsale oblongum, obtusum, apice incurvum, concavum, fere 1.1 cm. longum, 0.44 cm. latum. Sepala lateralia oblique oblonga, falcata, apice oblique cucullata, obtusa, margine antico basi dilatata, c. 0.9 cm. longa, basi 0.55 cm., supra basin 0.28 cm. lata. Petala oblique subspathulata, apicem incurvum versus satis sensim dilatata, obtusissima, concava,

c. 0.875 cm. longa, superne 0.3 cm. lata. Labellum parvum, erectum, infra medium valde recurvum, constrictione obsolete 3-lobum, costa conspicua longitudinali macerata rugosa basin labelli non attingente in lobo intermedio in incrassationem triangulam apicem fere attingentem transverse rugulosam convexam subtus concavam dilatata, undulatum, 7-nervium, explanatum ambitu quinquangulare, basi truncatum, c. 0.475 cm. longum, hypochylio quadrangulo, c. 0.22 cm. longo, 0.27 cm. lato, lobis lateralibus abbreviatis obtusis, lobo intermedio ovato-triangulo, marginibus apice recurvis subacuminato, acuto, crenulato, c. 0.24 cm. longo, 0.26 cm. lato. Gynostemium breve, a dorso compressum, dorso convexum, absque anthera c. 0.17 cm. longum, clinandrio transverso excavato, filamento breviter dentiformi, auriculis brevibus, late triangulis, margine antico rotundatis, apice denticulo instructis. Pes gynostemii cum ovario angulum obtusum faciens, incurvulus, porrectus, late linearis, truncatus, c. 0.4 cm. longus. Ovarium pedicellatum acute 6-costatum, c. 0.54 cm. longum.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 400 m., epiphytical in forest. (W. FEUILLETAU DE BRUYN n. 105, 14 September 1914; "fl. white, leaves redbrown").

Perhaps nearest to *D. neuroglossum* Schltr. but with narrower and thicker leaves, differently coloured flowers, the lip with a much thicker keel, a much longer column foot.

Description from herbarium.

Dendrobium? sarcodes Schltr. Orch. D. Neu-Guinea (1912), 588. -

Dutch New-Guinea: In the southern part, on the way to Mt. Goliath. (A. C. DE KOCK, liv. pl. cult. in Hort. Bog. sub n. 154).

This tallies with the description and sketch of *D. sarcodes* Schltr. but the mid- and side-lobes of the lip are a little shorter.

Dendrobium angraecifolium Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 169; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 185, 5 November 1914). Near Otke-river, 10 m., epiphytical in forest. (H. J. LAM n. 596, 8 July 1920).

Dendrobium niveopurpureum J. J. S. n. sp.

Tab. LXIV, 68.

Caules elongati, subflexuosi, valde compressi, nitidi, dilutius virides, c. 50 cm. et plus longi, internodiis c. 2—2.6 cm. longis, intermediis basi c. 0.5 cm. apice 0.75 cm. latis. Folia patentissima, curvata, oblongo-loriformia, inaequaliter subbilobula, basi amplexicaulia, margine recurva, costa media supra vix sulcata subtus prominula, tenuiter coriacea, nitida, subtus subopaca, c. 11 cm. longa, 2.7—3 cm. lata; vaginae tubulosae, valde compressae, internodia aequantes vel paulum superantes, apice truncatae, dilute virides, opacae, ad c. 0.85 cm. latae. Inflorescentiae brevissimae, vaginas 2 perforantes, patentissimae, 2-florae, pedunculo lateraliter compresso, albido, vaginulis tubulosis lateraliter compressis obtusis ad c. 1.1 cm. longis ad basin. Bracteae adpressae, triangulae. Flores mediocres, ephemeri, carnosi, nivei. Sepalum dorsale oblongum, apice angustatum, obtusum, basi vix contractum, concavum, margine incurvum, costa media dorso leviter obtuse incrassata, c. 1.7 cm. longum, 0.75 cm. latum. Sepala lateralia oblique triangula, margine superiore curvata, obtusa, concava, margine incurva, costa media dorso

obtuse incrassata, c. 1.6 cm. longa, basi 0.93 cm. lata. Petala suboblique elliptica, obtusa, marginibus superne incurvis spurie acuta, basi satis angusta, valde concava, dorso sulcata, c. 1.5 cm. longa, 0.9 cm. lata. Labellum mobile, curvulum, trilobum, concavum, intus in $^1/_4$ parte supra basin costa valida longitudinali apicem versus decrescente et in basi lobi medii in discum pulvinato-incrassatum verrucosum terminante, basi callis bene elevatis irregulariter subreticulatis marginibus verrucoso-crenulatis purpureo-marginatis notatum et utrinque grosse verrucosum, papillosum, subtus longitudinaliter sulcatum, subtus $^2/_5$ partibus inferioribus purpurascenti-album, ceterum atropurpureum, intus basi album purpureo-maculatum, ceterum atropurpureum, inexplanatum c. 0.77 cm. longum, explanatum ambitu transverse rhombeum, breviter et late cuneato-unguiculatum, c. 0.9 cm., usque ad apicem lobórum lateralium 0.63 cm. longum, bene 1 cm. latum; lobi laterales erecti, incurvi, lati, irregulariter rotundato-quadranguli, antice vix obtuse producti; lobus intermedius porrectus, apice recurvus, late transverse ovali-ovatus, breviter obtuse triangulo-apiculatus, disco triangulo convexo verrucoso, lateribus erectis margine recurvis convexis, c. 0.375 cm. longus, 0.7 cm. latus. Gynostemium rectum, longiusculum, anguste conicum, ovario tenuius, album, c. 0.6 cm. longum, clinandrio concavo, filamento subulato, auriculis brevibus, quadrangulis, truncatis. Anthera cucullata, apice manifeste dilatata, truncata, antice plana, alba, c. 0.175 cm. lata. Stigma quinquangulari-orbiculare, leviter excavatum. Pes gynostemii cum ovario angulum acutum faciens, incurvulus, oblongus, apice paulo angustatus, truncatus, intus velutino-papillosus, coloratus, macula transversa magna atropurpurea supra basin, deinde fascia transversa curvata alba, tum fascia transversa flexuosa atropurpurea, post fascia transversa dilute aurantiaco-brunnea, apice aurantiaco-albus, c. 0.6 cm. longus. Ovarium obconicum, curvulum, apice obliquum, 6-sulcatum, album, c. 0.7 cm. longum; pedicellus tenuior, albus, c. 0.75 cm. longus.

Dutch New-Guinea? (Cult. in Hort. Bog.)

The origin of this species is unknown. The Buitenzorg Botanic Gardens are indebted for it to the late Mr. J. SCHULLER TOT PEURSUM.

In habit it is similar to *D. Horstii* J. J. S., but differs in the colour of the flowers and the shape of the lip. It is to be regretted that the flowers last only one day, the snowwhite of the sepals and petals contrasting really exquisitely with the beautiful purple of the lip.

Description from a living specimen.

Dendrobium collinum J. J. S. in Bull. Dép. Agric. Ind. néerl. XXXIX (1910), 8; KRZL. in Pflanzenr. Heft 45 (1910), 360. — *D. planum* J. J. S. var. *collinum* J. J. S. in N. Guinea VIII (1911), 556, t. XC B.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 10 m., epiphytical. (H. J. LAM n. 637, 16 July 1920).

Dendrobium rugulosum J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 10; in N. Guinea XII (1913), 51, t. XIV, 40.

Dutch New-Guinea: In the northern part, Pionier-bivouac, 10 m., epiphytical. (H. J. LAM n. 615, 14 July 1920; "leaves light green, sepals and petals white, lip yellow in the centre bordered white, sometimes lilac, column white with a lilac blotch at the base, smell of hyacinths").

The specimen differs somewhat from the type specimen, especially in the shape of the lip. It is possible that *D. gatiense* Schltr. belongs here but I have seen no specimens.

Dendrobium incumbens Schltr. Orch. D. N. Guinea (1912), 615.

Tab. LXIV, 69.

Dutch New-Guinea: In the northern part. (W. FEUILLETAU DE BRUYN n. 17, without date, etc.).

This tallies very well with SCHLECHTER's description and drawing.

Dendrobium simplex J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 8; in N. Guinea XII (1913), 40, t. XI, 30; (1916), 318.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 34, July—August 1914). Ridge to Doorman-top, 3000—3100 m., open ridge with *Casuarina* and *Dacrydium*, epiphytical. (H. J. LAM n. 1823, October 1920; "leaves dull dark green, pseudobulbs very hard, shining dark coffee-brown, sepals and petals outside yellow with faint violet longitudinal streaks, lip side lobes bright violet centre beneath yellowish white above, base greenish, column light green"; n. 1593, October 1920).

Dendrobium bifalce Lndl. in Lond. Journ. Bot. II (1843), 237; etc.

Schouten Islands: Biak, north-coast, Korim, 200 m., full sun. (W. FEUILLETAU DE BRUYN n. 441).

Dendrobium subquadratum J. J. S. in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 20; in Nova Guinea VIII (1909), 65, t. XXIII, fig. 73. — *D. Kingianum* Bidw. var. *subquadratum* Krzl. in Pflanzenr. IV. 50. II. B. 21 (1910), 274. — *D. Sikinii* Schltr.! Orch. D. N. Guinea (1912), 488.

I cannot distinguish *D. Sikinii* Schltr. from this species.

Dendrobium rariflorum J. J. S. n. sp.

Tab. LXIV, 70.

Caules approximati, tenuiter clavati, obtuse subseptemangulati, basi incrassati, c. 3-nodes, c. 8.5 cm. longi, supra basin fere 0.1 cm. diam., internodio summo 4.1 cm. longo 0.34 cm. diam., 1-folii, initio vaginis tubulosis tecti. Folium erectum, lineari-lanceolatum, acutum, brevissime bidentatum cum apiculo, supra in utraque canaliculae parte convexum, costa media subtus prominente, acute marginatum, carnoso-coriaceum, c. 3.4 cm. longum, 0.525 cm. latum. Inflorescentiae 2 ante folium, 1—2-florae, pedunculo filiformi, folium superante, c. 5—6 cm. longo, nonnullis vaginulis tubulosis superne accrescentibus laxioribusque donato. Flores in sectione parvuli, c. 1.75 cm. lati, 1.85 cm. longi. Sepalum dorsale subtriangulo-oblongum, apicem versus sensim angustatum, obtusum, leviter concavum, 3-(sub 5-)nervium, c. 1.3 cm. longum, 0.48 cm. latum. Sepala lateralia lacinia brevi oblique oblonga ad pedem gynostemii decurrentia, mentum conicum cum ovario angulum subrectum faciens apice anguste rotundatum dorso inconspicue sigmoideum c. 0.625 cm. longum formantia, oblique lanceolata, apicem versus sensim angustata, subacuta, 5-nervia, c. 1.35 cm., margine antico 1.7 cm. longa, basi 0.77 cm., supra basin 0.46 cm. lata. Petala parallela, oblique rhombeo-spathulata, acuta, concava, 3-nervia, c. 1.5 cm. longa, basi 0.225 cm., superne 0.55 cm. lata. Labellum basi pedi gynostemii brevissime adnatum, concavum, 3-lobum, 5-nervium, costis 3 longitudinalibus approximatis parallelis altis ante medium labelli terminantibus, costis exterioribus patentibus superne altioribus in lamellam liberam porrectam oblique quadrangulam truncatam productis, costa tertia paulo humiliore in dentem triangulum producta, explanatum late rhombeum, fere 1.7 cm., usque ad apicem loborum lateralium 1.3 cm. longum, bene 1.2 cm. latum; lobi laterales erecti, porrecti,

gynostemium longe superantes, concavi, parte antica oblique rhomboidea, angulo exteriore rotundata, antice obtusa, leviter undulata, c. 0.4 cm. longa; lobus intermedius laterales superans, porrectus, quinquangularis, obtuse apiculatus, concavus, repandulus, c. 0.7 cm. longus, 0.525 cm. latus. Gynostemium brevissimum, dorso subexcavatum, c. 0.175 cm. longum, clinandrio transverso excavato, filamento subulato, auriculis porrectis falcato-recurvis antice rotundatis subapiculatis. Anthera cucullata, transverse ovali-reniformis, apice abrupte anguste incurvo truncata, c. 0.175 cm. lata. Pollinia 4, in corpuscula 2 obovata supra convexa subtus plana unita, lateraliter compressa, c. 0.1 cm. longa. Stigma longitudinale, ovale, apice subtruncatum. Pes gynostemii cum ovario angulum subrectum cum gynostemio angulum obtusum faciens, apice incurvulus, oblongus, truncatus, leviter concavus, dorso leviter 3-costatus, c. 0.625 cm. longus. Ovarium obconicum, sulcis 6 binis approximatis, fasciis latis verruculosum, c. 0.4 cm. longum; pedicellus teres, 0.8 cm. longus.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C—D, 1800—2200 m. (L. A. C. M. DOORMAN n. 8, 2 September 1914; "flowers ivory-coloured, dotted redbrown, lip white to tender green with several darker redbrown dots, streaked redbrown inside").

Differing from *D. torricellense* Schltr. by the much smaller dimensions of the vegetative parts, one-leaved pseudobulbs, and the shape of the lip.

The specimen at hand is perhaps a young one.

Description from materials preserved in alcohol.

Sect. Ceratobium.

Dendrobium Mirbelianum Gaud. in Voy. Freyc. (1826), 423, t. XXXVIII; etc.

Dutch New-Guinea: In the northern part, Manokoeari. (R. F. JANOWSKY 1914, KORNASI, liv. pl. cult. in Hort. Bog. sub n. 11).

A form with rather light yellowish green flowers, the lip with a white centre and dark violet-brown veins.

A similar form but with the flowers more yellow I received from Mr. J. G. DAMMERBOER at Buitenzorg.

A few times I saw another form with deep brown sepals and petals, the lip veined dark brown on a pale yellow ground, a light brown column streaked longitudinally very dark brown, a pale yellow anther and a very dark brown ovary. The origin of this form is unknown to me.

Dendrobium Schulleri J. J. S. in Bull. Jard. Bot. Buit. 2e sér. n. XIII (1914), 63; in Nova Guinea XII (1916), 323, t. CXVII, 213.

Island of Noemfor, on the north coast of New-Guinea. (J. G. DAMMERBOER, liv. pl.).

A form with almost uniform light green sepals and petals and a light green lip with violet markings.

Dendrobium Aries J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 64; in Nova Guinea XII (1916), 324, t. CXVII, 214.

Dutch New-Guinea: In the northern part, Mamberamo, near Pionier-bivouac, 10 m., on a tree. (H. J. LAM n. 452, 28 July 1920; also cult. in Hort. Bog. sub n. 144).

The origin of this plant was as yet unknown.

The leaves are oblong, narrowed to be apex, obliquely obtuse, 13.75 cm. long, 4.5 cm. broad. The raceme is 22 cm. long and bears 27 flowers.

Dendrobium Odoardi Krzl. in Pflanzenr. IV. 50. II. B. 21 (1910), 157.

Tab. LXV, 71.

Caules . . . . . Folia ovato-oblonga, apicem versus angustata, breviter oblique obtuse biloba, costa media supra sulcata subtus obtuse prominente, carnoso-coriacea, supra nitida, subtus opaca, c. 14 cm. longa, 4.7 cm. lata. Inflorescentiae laxius multiflorae, pedunculo tereti, magnam partem sordide atroviolaceo, minute viridi-punctato, c. 10—11 cm. longo, nonnullis vaginulis brevibus tubulosis pallidis donato, rachide angulata, colore pedunculi, c. 6.5—16 cm. longa. Bracteae pedicello adpressae, quinquangulares, acutae, concavae, c. 0.4 cm. longae. Flores c. 9—22, vagi, patentissimi, mediocres, c. 3 cm. longi, 4 cm. lati. Sepalum dorsale cum ovario angulum obtusum faciens, porrectum, revolutum, laxe undulatum, oblongum, obtusum, basi album, ceterum citrinum et castaneo-suffusum, nervis 7 paulo obscurioribus, nervo medio basi purpureo, c. 2.1 cm. longum, 0.95 cm. latum. Sepala lateralia cum pede gynostemii mentum reversum cum ovario angulum acutum faciens conicum dimidio superiore fere contractum obtusum c. 1.45 cm. longum formantia, margine antico fere omnino libera, divergentia, $^1/_3$—$^2/_5$ partibus superioribus revoluta, laxe undulata, oblique subtriangulo-oblonga, obtusa, basi antice lacinia angusta obliqua c. 0.7 cm. longa 0.3 cm. lata ad pedem gynostemii decurrentia, basi alba, ceterum citrina, superne margine apiceque castaneo-suffusa, nervis in parte alba partim flavis partim purpureis, cum sepalo dorsali dorso pallide flavescentia, c. 2.3 cm., margine antico 3.3 cm. longa, 1.2 cm. lata. Petala erecta, divergentia, semitorta, laxe undulata, late oblique spathulata, nitide fusca, flavo-suffusa, basi purpureo-suffusa, dorso pallide flavescentia fusco-marginata, c. 2.65 cm. longa, ungue lineari, c. 1.2 cm. longo, 0.275 cm. lato, lamina obovata, rotundata, c. 1.4 cm. longa, fere 1.1 cm. lata. Labellum ungue anguste obverse triangulo pallide viridi c. 0.7 cm. longo pedi gynostemii in formam calcaris adnatum, valde concavum, 3-lobum, subtus leviter longitudinaliter costulatum, inexplanatum totum c. 3.25 cm. longum, lamina explanata ambitu quinquangulari basi subrotundata, c. 2.6 cm., usque ad apicem loborum lateralium 2.1 cm. longa, 2.1 cm. lata, intus 5-costatum, costa media basi humili non in unguem decurrente recta violacea nitida a medio laminae fere leviter undulata, antice bene elevata et magis undulata opaca flava violaceo-fusco-suffusa, ultra medium lobi intermedii abrupte terminante, costis 2 sequentibus intermedia altioribus, rectis, nitide violaceis, a medio laminae decrescentibus et costa media multo humilioribus verrucoso-crenatis flavis violaceo-fusco-notatis, usque in $^2/_5$ partes supra basin lobi intermedii productis, costis exterioribus paululo brevioribus et humilioribus, atroviolaceis, crenulatis, superne verrucosis; lobi laterales erecti, basi latissimi, trapezoidei, apice antice breviter liberi, porrecti et subrecurvuli, obtusi, antice repandulo-crenulati, dilute virides, extus angustius sordide fusco-marginati, intus nervis numerosis patentibus ramosis prominulis fuscis apice in marginem latum sordide fuscum confluentibus; lobus intermedius porrectus, concavus, apice canaliculatus, tranverse quadrangulo-ovalis, apice latissimus, vix apiculatus, subundulatus, citrinus, nervis patentissimis ramosis fuscis superne pallidioribus, c. 0.75 cm. longus, 1.3 cm. latus. Gynostemium crassum, supra visum ambitu

oblongo-quadrangulum, dorso leviter excavatum et infra antheram conspicue gibbosum, longitudinaliter costatum, sectione transversa triangulum, margine angusto recurvulo, album, apice margine et stria longitudinali utrinque violaceum, subtus papillosum, pallidum, dense confluenter pulchre violaceo-punctatum, 0.77 cm. longum, clinandrio excavato, auriculis antheram superantibus, oblongis, apice oblique truncatis, carinatis, albis. Anthera cucullata, quadrangula, antice convexa rugosaque, apice paululum producta incurva et truncata, dorso rotundato-bilobula, omnino velutino-papillosa, diluta flava, apice alba, c. 0.28 cm. lata. Pollinia 4, sublinearia, supra convexa, subtus concava, nitida, semipellucide flava, c. 0.2 cm. longa. Stigma alte excavatum, obovatum, margine latiusculo prominente, albo-marginatum. Pes gynostemii cum ovario et gynostemio angulum subrectum faciens, canaliculatus, dorso convexus, apicem versus sensim angustatus, c. 1.4 cm. longus, dimidio inferiore colore gynostemii, dimidio superiore cum parte inferiore dorso angulum obtusum faciente, ungui labelli adnato, dilute viridi, laxe atroviolaceo-striato. Ovarium teres, 6-sulcatum, pallide viride, sordide violaceo-suffusum, c. 0.4 cm. longum; pedicellus cum ovario angulum obtusum faciens, teres, basi incrassatus, pallide viridis, interdum violaceo-suffusus, c. 3.5 cm. longus.

Dutch New-Guinea: North coast, Humboldt-bay. (Cult. in Hort. priv. J. DEMMENI, Batavia). Antus. (O. BECCARI).

Amongst the species described *D. Odoardi* Krzl. is the only of which the description tallies more or less with the present specimen. According to the opinion of Prof. KRÄNZLIN, to whom I sent a sketch, it is his species. A comparison with KRÄNZLIN's description presents the following differences.

In Mr. DEMMENI's plant the bracts are acute and not reflexed, the flowers smaller with 5 keels on the lip, of which the median does not reach the top, the outer ones being lower at the top and more raised at the base than the median. Moreover the midlobe cannot be said to be deltoid.

Description from a few fresh inflorescences and a single leaf.

Dendrobium violaceoflavens J. J. S. n. sp.

Tab. LXV, 72.

Caules validi, elongati, superne attenuati, foliati. Folia lanceolata, obtusa, breviter retusa, margine acuta recurvataque, costa media supra canaliculata subtus prominente, sicco coriacea, c. 14.5—19.5 cm. longa, 4—4.6 cm. lata; vaginae tubulosae, apice antice excisae, internodiis paulo breviores. Inflorescentiae e nodis superioribus caulium foliatorum, erecto-patentes, validae, elongatae, laxe multiflorae, pedunculo tereti, ad c. 12.5 cm. longo, vaginulis c. 7 brevibus tubulosis superne laxius dispositis donato, rachide ad 35 cm. longa. Bracteae parvae, sicco ad c. 0.7 cm. longae. Flores axillares, majusculi, carnosi. Sepalum dorsale oblongum, fere rectangulum, obtusissimum, rotundato-truncatum, 7-nervium, c. 2.45 cm. longum, 1.3 cm. latum. Sepala lateralia lacinia anguste oblique triangula ad pedem gynostemii decurrentia, mentum reversum cum ovario angulum fere rectum faciens conicum superne attenuatum anguste obtusum curvulum c. 1.75 cm. longum formantia, marginibus anticis fere usque ad apicem menti patentibus, oblique oblonga, rotundata, concava, margine recurvula, margine antico laxe undulata, c. 8-nervia, c. 2.65 cm. longa, basi 1.85 cm., medio 1.17 cm. lata. Petala oblique spathu-

lata, semitorta, convexa, c. 2.8 cm. longa, ungue late lineari basi 0.35 cm. lato sensim in laminam oblique obovatam obtusissimam 1.17 cm. latam dilatato. Labellum ungue late lineari superne sensim leviter dilatato dimidio superiori pedis gynostemii adnatum, 3-lobum, gynostemium longe superans, carnosum, inexplanatum late cuneatum, glabrum, totum c. 3.2 cm. longum, ad lobos laterales 1.75 cm. latum, ungue 0.9 cm. longo, inter lobos laterales concavum, superne plica longitudinali introrsa convexa valida instructum, costis 5 parallelis approximatis inter lobos laterales, costis 2 exterioribus altissimis extrorsum pronis longe ante basin lobi intermedii leviter rotundato-elevatis in lobo medio decrescentibus et superne evanescentibus, 2 sequentibus similibus sed minoribus, costa intermedia humiliore sed ad basin lobi intermedii valde rotundato-elevata ante apicem evanescente, costis 2 brevissimis additis in basi laminae; lobi laterales patentissimi, margine postico incurvi et cum pedi gynostemii contigui, apice recurvuli, inferne concavi, superne convexi, trapeziformes, margine exteriore rotundati, nervis intus prominentibus; lobus intermedius porrectus, inferne marginibus valde recurvis tubulosus, parte antica marginibus minus recurvis convexus, apice incurvulus apiculatusque, inexplanatus spathulatus, dorso apicem versus carinatus, c. 0.85 cm. longus, 0.55 cm. latus. Gynostemium rectum, crassum, ovario multo crassius, dorso convexum, canalicula lata longitudinali in lateribus, subtus concavum et dense papillosum, c. 0.875 cm. longum, fere 0.7 cm. latum, clinandrio transverso alte excavato margine postico truncato erosuloque, filamento incurvulo subsubulato obtuso verruculoso, auriculis breviter dentiformibus. Anthera magna, ambitu transverse sexangulato-ovalis, basi biloba, apice truncata, magnam partem papilloso-puberula, c. 0.45 cm. lata. Pollinia 4, angusta, supra convexa, subtus plana, exteriora extus convexa sectione transversa triangula, interiora lateraliter compressa linearia, c. 0.23 cm. longa. Stigma alte excavatum, proprius orbiculari-obovatum, margine utrinque valde producto obverse lageniforme. Pes gynostemii cum ovario angulum fere rectum faciens, c. 1.75 cm. longus, parte inferiore quadrata, late canaliculata cum marginibus convexis, papillosa, carnosa, parte apicali angustiore, tenuiore, leviter incurvula, late lineari, apicem versus paululum angustata, canaliculata, anguste obtusa, ungui labelli adnata, c. 1 cm. longa. Ovarium teres, 6-sulcatum, curvulum, c. 1.1 cm. longum; pedicellus teres, basin versus incrassatus, c. 5.5 cm. longus, basi 0.4—0.45 cm. diam.

Dutch New-Guinea: In the northern part, Mamberamo, Edi-falls, 40 m., epiphytical in forest, half shade, stony country. (A. C. TH. THOMSEN n. 680 (type), 14 April 1914; "stems 3 m. long, "flowers yellow with a blue lip"). Pionier-bivouac, 10 m., in a tree c. 40 m. high. (H. J. LAM n. 451, 23 July 1920; "2.5—4 m. high, ovary, sepals and petals pale yellowish white with violet dots, lip veined violet"). Also cultivated in Hort. Bog.

Many years ago I was informed for the first time about this beautiful plant by Mr. J. DEMMENI, Batavia, who obtained living specimens in New-Guinea and presented me with a sketch in watercolours of the flowers. Those plants did not flower having suffered too much from sea-water and the species remained undescribed till I detected it in the two above collections. A short time ago, however, it flowered in the Buitenzorg Gardens, viz. a specimen brought by Dr. LAM from New-Guinea.

In the colour of the flowers it seems to agree more or less with *D. ionoglossum* Schltr. but in the characteristics of the flowers it is very different.

Description from herbarium and flowers preserved in alcohol.

Dendrobium veratrifolium Lndl. in Hook. Lond. Journ. Bot. II (1843), 236; etc.

Dutch New-Guinea: In the northern part, without locality. (K. GJELLERUP, cult. in Hort. Bog. sub n. 18).

A beautiful form with the petals tinged yellowish especially when young.

Dendrobium antennatum Lndl. in Hook. Lond. Journ. Bot. II (1843), 236; etc.

Schouten Islands: Soepiori, south coast, kamp. Sowek. (W. FEUILLETAU DE BRUYN n. 260, 25 July 1920).

Sect. Eudendrobium.

Dendrobium anosmum Lndl. in Bot. Reg. XXI (1884), misc. 41; J. J. S. in Nova Guinea XII (1916), 351; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 842, 2 September 1914). Same locality, plain north of Van Rees-mountains (W. FEUILLETAU DE BRUYN n. 238, 10 December 1914). Same locality, Pionier-bivouac, 10 m., forest. (H. J. LAM n. 605, July 1920).

Sect. Cuthbertsonia.

Dendrobium atromarginatum J. J. S. n. sp.

Tab. LXVI, 73.

Pusillum. Rhizoma brevissimum, ramosum, radicibus tenuibus. Pseudobulbi aggregati, subglobosi, c. 0.5 cm. longi, 2-folii. Folia divergentia, oblongo-ovato-elliptica, acuta, apiculata, supra in utraque canaliculae parte bene convexa, costa media subtus prominente, supra canalicula excepta grossius verruculosa, c. 1.1—1.3 cm. longa, 0.45—0.57 cm. lata; vagina canaliculata, c. 0.25 cm. longa. Inflorescentia abbreviata, 1-flora, pedunculo nonnullis vaginulis amplectentibus infundibuliformibus bracteae similibus donato. Bractea satis ample infundibuliformis, truncata, apiculata, costa media dorso obtuse prominente, verruculosa, c. 0.35 cm. longa. Flos majusculus, c. 3.5 cm. longus. Sepalum dorsale ovale, rotundatum, vix apiculatum, apice parce papillosum, planum, 5-nervium, c. 1.5 cm. longum, fere 0.9 cm. latum. Sepala lateralia lacinia elongata ad pedem gynostemii decurrentia, mentum reversum ovario adpressum vix recurvulum marginibus anticis longitudine c. 1.2 cm. connatis magnam partem anguste calcariforme obtusum c. 1.75 cm. longum formantia, parte antica porrecta, subverticalia, oblique late subovata, obtusa, 6-nervia, usque ad apicem ovarii c. 1.4 cm., margine antico (partis liberae) 2.15 cm. longa, 1.15 cm. lata. Petala oblique cuneato-obovata, obtusissima, vix apiculata, margine apicali minute papillosa, 3-nervia, c. 1.7 cm. longa, basi 0.23 cm., superne 1 cm. lata. Labellum simplex, longitudine c. 1.1 cm. pedi gynostemii adnatum, parallelum pedi leviter curvulum, gynostemium bene superans, canaliculato-concavum, subtus convexum et praesertim versus apicem leviter minute celluloso-verruculosum, costulis 2 longitudinalibus inconspicuis non confluentibus a marginibus decurrentibus intus in basi laminae, inferne intus sparse verruculosum, 7-nervium, carnosulum, explanatum spathulatum, c. 3 cm. longum, ungue lineari, pedi gynostemii adnato, lamina cuneato-obovata, medio fere leviter constricta, apice late rotundata cum apiculo parvo obtuso, c. 2 cm. longa, basi 0.35 cm., superne 1.15 cm. lata. Gynostemium breve, crassum, sectione transversa aequilateraliter trapeziforme, costula inconspicua longitudinali

convexa in dorso, marginibus in utraque stigmatis parte obtusangule dilatatum, c. 0.45 cm. longum, clinandrio transverso alte excavato, filamento arcuato subulato, auriculis porrectis, parallelis, triangulis, obtusis, margine postico erosulis. Anthera cucullata, quadrangula, utroque latere rotundata, apice levissime exciso-truncata hirtello-ciliolataque, dorso biloba, omnino minute verruculosa, c. 0.28 cm. lata. Pollinia 4, in corpuscula 2 obovata supra convexa subtus concava unita, c. 0.16 cm. longa. Stigma semiorbiculare, apice truncatum. Pes gynostemii linearis, obtusus, canaliculatus, dorso papillosus, c. 1.75 cm. longus. Ovarium pedicellatum leviter clavatum, rectum, dense verruculosum papillosumque, c. 1.9 cm. longum.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac B, 1330 m. (L. A. C. M. DOORMAN nrs. 16 and 17, July—August, 1914; "bright red, lip pale red with a dark border; the colours vary from dark red to light wine-red").

The flowers are as large as those of *D. Agathodaemonis* J. J. S. and *D. sophronites* Schltr. From the first it differs in the short two-leaved pseudobulbs, coarsely warty leaves, straight column, from the latter in the shorter pseudobulbs, broader leaves, much broader lip (supposing that the breadth given by Dr. SCHLECHTER refers to the expanded lip), and the colour.

Description from a specimen preserved in alcohol.

Dendrobium lichenicola J. J. S. n. sp.

Tab. LXVI, 74.

Pusillum. Rhizoma brevissimum, ramosum, radicans. Pseudobulbi aggregati, turbinati ad subglobosi, paucinodes, inter nodes majores constricti, c. 0.3—0.4 cm. diam., 2-folii. Folia divergentia, oblongo-elliptica, acuta, supra leviter convexa cum canalicula longitudinali, sparse verruculosa, c. 0.7—1 cm. longa, 0.3—0.325 lata. Inflorescentia 1-flora, pedunculo abbreviato, nonnullis vaginulis bracteae similibus donato. Bractea infundibuliformis, truncata, apiculata, c. 0.25 cm. longa. Flos mediocris, c. 2 cm. longus. Sepalum dorsale oblongo-ovatum, obtusum, glabrum, apice vix papillosum, 3-nervium, c. 0.95 cm. longum, 0.45 cm. latum. Sepala lateralia lacinia oblique triangula basin versus angustata ad pedem gynostemii decurrentia, mentum reversum ovario adpressum rectum marginibus anticis longitudine c. 0.65 cm. connatis calcariforme teres obtusum ovario pedicellato bene brevius fere 1.1 cm. longum formantia, parte antica oblique subovato-oblonga, obtusa, breviter obtuse apiculata, 4-nervia, usque ad apicem ovarii c. 1 cm., margine antico (partis liberae) 1.625 cm. longa. Petala ex ungue oblique oblongo cum marginibus parallelis abrupte in laminam obovato-ellipticam brevissime apiculatam dilatata, 1-nervia, c. 1 cm. longa, ungue 0.17 cm. lato, lamina 0.8 cm. longa 0.425 cm. lata. Labellum simplex, longitudine c. 0.6 cm. pedi gynostemii adnatum, rectum, gynostemium bene superans, concavum, subtus convexum, intus in $^3/_5$ partibus inferioribus laminae sparse tenerrime muriculatum, incrassatione V-formi in basi laminae, 5-nervium, explanatum spathulatum, c. 2.25 cm. longum, ungue late lineari magnam partem pedi gynostemii adnato, lamina cuneato-obovata apice late rotundato leviter erosula, parte libera 1.65 cm. longa, basi 0.175 cm., superne 0.77 cm. lata. Gynostemium breve, crassum, dorso convexum, marginibus in utraque stigmatis parte rotundato-obtusangule dilatatum, absque anthera c. 0.25 cm. longum, clinandrio alte excavato transverso, filamento arcuato subulato, auriculis latis triangulis obtusis margine postico denticulatis. Anthera cucullata, quadrangula, utroque latere rotundata, apice truncata ciliataque, dorso bilobula, c. 0.2 cm. lata. Pollinia 4, in corpuscula 2 subobovata supra convexa subtus

concava unita, c. 0.13 cm. longa. Stigma semiovale, apice truncatum. Pes gynostemii ovario subadpressus, rectus, linearis, obtusus, canaliculatus, fere 1.1 cm. longus. Ovarium pedicellatum clavatum, 6-sulcatum, c. 1.6 cm. longum.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m., between moss. (L. A. C. M. DOORMAN n. 18, July—August 1914; "red, lip dark red").

Allied to *D. Cuthbertsonii* F. v. Muell. but with two-leaved bulbs, oblong elliptic leaves, a blunt dorsal sepal, much narrower petals, a longer lip. From *D. sophronites* Schltr. it differs in the smaller broader leaves, smaller flowers, the broader lip with a V-shaped thickening at the base of the blade, and the smooth ovary and pedicel.

Description from a specimen preserved in alcohol.

Dendrobium asperifolium J. J. S. in Bull. Jard. Bot. 2e sér. II (1911), 13; in Nova Guinea XII (1913), 72, t. XIX, 57.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1450 m., epiphytical, in moss. (H. J. LAM n. 1576, 11 October 1920; "pseudobulbs yellowish green, leaves dark green, violet beneath, sepals lilac, petals inferior half lilac, upper half yellowish white, lip lilac lighter towards the apex, margin yellow with a few red dots, column white with a dirty brown tip, ovary lilac").

Only a very small specimen with a single flower was collected. It is smaller in all its parts than the type specimen but as I could not find structural differences I have placed it here. *D. trachyphyllum* Schltr. is a very close ally.

Sect. Oxyglossum.

Dendrobium Vexillarius J. J. S. in Bull. Dép. Agr. Ind. néerl. XXXIX (1910), 7; in Nova Guinea VIII (1911), 575, t. XCVI A; Krzl. in Pflanzenr. Heft 45 (1910), 362.

In sectione validum. Caules approximati, erecti, flexuosi, 4—19 cm. longi, 4—10-folii, inferne vaginati, internodiis ad c. 0.8—2.7 cm. longis. Folia erecto-patentia, linearia, obtusa cum apiculo lateraliter compresso, superne minute crenulato-denticulata, supra in utraque parte canaliculae longitudinalis convexa, nervis subtus prominulis, sicco rigide coriacea, c. 2.75—5.5 cm. longa, 0.325—0.45 cm. lata; vaginae inferne tubulosae, parte superiore canaliculatae, deinde magis rumpentes, sicco prominenter nervosae, internodia superantes, ad c. 1.8—3.3 cm. longae. Inflorescentiae 1—3, e nodis superioribus caulium foliatorum, pseudoterminales, brevissimae, 2—3-florae, pedunculo c. 0.3 cm. longo, nonnullis vaginulis imbricatis tubuloso-infundibuliformibus superne accrescentibus et in bracteas vergentibus donato. Bracteae rachidem basi amplectentes, conduplicatae, ovato-triangulae, marginibus incurvis apice canaliculato-acuminatae, acutae, c. 3-nerviae, costa media dorso prominente, c. 0.9 cm. longae, 0.7 cm. latae. Flores conspicui, ad c. 3.35 cm. longi, sepalis petalisque patentissimis. Sepalum dorsale erectum, oblongo-ovatum, obtusum, minute apiculatum, 3-nervium, costa media antice sulcata dorso carinata, c. 1.27 cm. longum, 0.625 cm. latum. Sepala lateralia lacinia elongata ad pedem gynostemii decurrentia, mentum conspicuum ovario adpressum leviter curvulum conicum apice marginibus anticis longitudine 0.47 cm. connatis anguste calcariforme obtusum saepissime plus minusve retusum c. 2 cm. longum formantia, parte antica divergentia, oblique subovato-triangula,

obtusa, apiculata, 4—5-nervia, costa media intus canaliculata dorso conspicue carinata, usque ad apicem ovarii c. 1.3 cm., margine antico c. 3.4 cm. longa. Petala oblique spathulata, dimidio superiore obovata subellipticave, obtusa, margine superne papillosa, 3-nervia, c. 1.2 cm. longa, ungue bene 0.2 cm., lamina 0.44 cm. lata. Labellum simplex, longitudine 1.25 cm. pedi gynostemii adnatum, ceterum pedi gynostemii gynostemioque adpressum, gynostemium superans, subrectum, concavum, subtus convexum, subspathulato-lineare, margine apicali utrinque incurvo breviter acuminatum, bene explanatum triangulo-acutatum, subacutum, 5-nervium, carnosulum, bene 3.1 cm. longum, inferne 0.4 cm., superne 0.625 cm. latum. Gynostemium breve, crassum, absque anthera 0.34 cm. longum, clinandrio excavato transverse ovali, filamento incurvulo triangulo, auriculis brevibus latis truncatis erosulis. Anthera cucullata, antice transverse quinquangularis, apice obtusangule incurvo truncata hirtellaque, dorso late retusa, c. 0.375 cm. lata. Pollinia 4, in corpuscula 2 oblique subobovata supra convexa subtus subplana unita, c. 0.2 cm. longa. Stigma suborbiculare, apice truncata. Pes gynostemii ovario adpressus, curvulus, linearis, apicem versus sensim leviter angustatus, obtusus vel retusus, canaliculatus cum costula valde inconspicua convexa, apice longitudinaliter excavatus, c. 2 cm. longus. Ovarium pedicellatum apicem versus sensim incrassatum, alato-triquetrum, lateribus vix concavum, 6-sulcatum, sulcis binis valde approximatis, alis non undulatis, c. 2.8 cm. longum.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3300 m., open slope between rocks, terrestrial between low shrubs, common. (H. J. LAM n. 1591, 17 October 1920; "stems brown or brownish yellow, leaves dark green above, dark greenish red beneath, sheaths red-brown, sepals and petals beautifully transparent light green or greenish yellow, lip very dark green with a little red, apex red, column dark green with a darker and brownish tip, mentum and ovary beautifully dark green"). Same locality, 3500 m. (H. J. LAM n. 1655, 18 October 1920; "leaves dark green or dark violet on both surfaces, sheaths dark violet, bracts yellowish green or violet, sepals and petals yellowish green sometimes tinged violet, lip dark green with a red tip, tips sometimes violet, mentum light yellowish green or sometimes (in plants growing in strong sunlight) bluish green, column dark green with a dark greyish green apex, ovary greenish blue or dark green or violet, fruit violet-green or violet. The amount of violet strongly depends on the local intensity of the light").

The very good materials collected by Dr. LAM enable me to give a fresh description of this interesting species.

The long leafy stems are uncommon in the section. According to H. N. RIDLEY more-leaved stems are also to be found with *D. fulgidum* Ridl. I improve the opportunity to change the name of this plant in **D. carstenszienge** J. J. S. as *D. fulgidum* Schltr. has the priority.

Dendrobium tenens J. J. S. n. sp.

Tab. LXVI, 75.

Pusillum. Pseudobulbi aggregati, plus minusve fusiformes, apice contracti, paucinodes, c. 1—2 cm. longi, 0.65—0.5 cm. diam., 2—4-folii, initio vaginis verruculosis tecti. Folia linearia ad lineari-lanceolata, acuta, apiculata, superne papilloso-serrulata, basi conduplicata, supra in utraque parte canaliculae longitudinalis convexa, costa media dorso prominente, carnoso-coriacea, rigida, c. 2—5.5 cm. longa, 0.5—0.6 cm. lata; vaginae inferne tubulosae, superne conduplicato-canaliculatae, c. 0.9—1.1 cm. longae. Inflorescentiae pseudoterminales, abbreviatae, 2-florae. Bracteae rachidem pedicellumque basi amplectentes, ovatae, acuminatae, c. 0.7 cm. longae.

Flores majusculi, c. 2.4 cm. lati, 3.1 cm. longi. Sepalum dorsale erectum, subovato-oblongum, rotundatum, apiculo brevi conico dorso ad apicem, margine apicali subpapillosum, 5-nervium, costa media dorso carinata, c. 1.4 cm. longum, 0.63 cm. latum. Sepala lateralia lacinia oblique triangula ad pedem gynostemii decurrentia, mentum conspicuum ovario adpressum rectum marginibus anticis longitudine c. 0.4 cm. connatis apice anguste calcariforme obtusum retusum c. 1.5 cm. longum formantia, parte antica bene explanata, patentia, oblique ovato-triangula, obtusa, breviter obtuse apiculata, costa media intus canaliculata dorso conspicue carinata, 6-nervia, fere 1.6 cm. longa, margine antico (parte basali excepta) 2.5 cm. metientia, basi 1.3 cm., tota 1.5 cm. lata. Petala erecto-patentia, oblique lanceolato-spathulata, subacuta, superne papilloso-ciliolata, 3-nervia, c. 1.325 cm. longa, ungue 0.175 cm., superne 0.35 cm. lato. Labellum longitudine c. 0.9 cm. pedi gynostemii adnatum, ceterum marginibus manifeste incurvis pedem gynostemii gynostemiumque arcte tenentibus, concavum, subtus plano-convexum, marginibus superne recurvis, apice non recurvo gynostemium superans, 5-nervium, nervis infra apicem intus prominulis, explanatum e basi cuneato-oblonga pedi gynostemii adnata oblongum, apicem versus vix dilatatum, apice rotundatum et breviter triangulo-acuminatum, acutum, margine apicali minute papillosum, totum c. 2,5 cm. longum, parte libera c. 1.6 cm. longa basi c. 0.5 cm. superne 0.575 cm. lata, acumine 0.16 cm. longo. Gynostemium breve, latum, a dorso compressum, supra visum quadrangulum, dorso convexum, absque anthera c. 0.25 cm. longum, 0.45 cm. latum, clinandrio transverso excavato, filamento subulato arcuato basi transverse quadrangulo-dilatato, auriculis porrectis triangulis acutis margine postico denticulatis. Anthera (e n. 15) cucullata, bene semiorbicularis, antice plana, apice truncata papillosaque, dorso retusa, c. 0.25 cm. longa, 0.45 cm. lata. Pollinia 4, in corpuscula 2 oblique obovata supra convexa subtus concava unita. Stigma transverse ovale. Pes gynostemii ovario arcte adpressus, rectus, linearis, apicem versus sensim angustatus, canaliculatus, longitudine c. 0.9 cm. labello adnatus, apice retusus, c. 1.55 cm. longus. Ovarium pedicellatum clavatum, alato-triquetrum cum costa in lateribus concavis, c. 2.1 longum.

Dutch New-Guinea: In the northern part, mountain-ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 14, July—August 1914; "yellow-green, lip dark green"; n. 15, "delicate yellow-green, lip grass-green with a yellow tip").

The nearest ally of this species is perhaps *D. geminiflorum* Schltr., but the leaves are acute and serrulate towards the apex, the sepals keeled behind, and the lip clinged to the column by means of its incurved margins.

The green colour of the flowers is rather rare in the section. The flowers of n. 14 were older than those of n. 15 and lacked the anther.

Description from materials preserved in alcohol.

Dendrobium pseudofrigidum J. J. S. n. sp. — *D. frigidum* J. J. S. (nec Schltr.) in N. Guinea XIII (1916), 331.

Tab. LXVII, 76.

Pusillum, caespitosum, radicibus longissimis flexuosis. Pseudobulbi approximati, subglobosi vel plus minusve turbinati, paucinodes, c. 0.2—0.3 cm. longi, 0.225—0.3 cm. diam., 2—3-folii, initio vaginis tecti. Folia divergentia, recurvula, ovata lanceolata ad linearia, acuta, subulato-apiculata, superne minutissime cartilaginee denticulata, supra in utraque parte canali-

çulae longitudinalis convexa, subtus convexa, carnosula, c. 0.43—0.5—1—1.9 cm. longa, 0.25—0.33—0.14—0.23 cm. lata; vaginae inferne tubulosae, superne petioliformi-angustatae, c. 0.075—0.3 cm. longae. Inflorescentia pseudoterminalis, brevissima, 2-flora, pedunculo abbreviato nonnullis vaginulis amplectentibus sursum accrescentibus et in bracteas vergentibus donato. Bracteae ovatae, subulato-acuminatae, minute repandulo-crenulatae, concavae, dorso carinatae, 5-nerviae, c. 0.425 cm. longae, 0.27 cm. latae. Flores ad c. 1.25 cm. lati, 1.5 cm. longi vel etiam minores (0.9 cm. lati, 1 cm. longi). Sepalum dorsale erectum, subrhombeo-oblongum, apice angustatum, obtusum, conico-apiculatum, convexum, 3-nervium, c. 0.6 cm. longum, 0.225 cm. latum. Sepala lateralia lacinia elongata ad pedem gynostemii decurrentia, mentum ovario parallelum angustum subrectum marginibus anticis longitudine c. 0.475 cm. connatis calcariforme subteres superne leviter a dorso compressum obtusum retusum c. 0.9 cm. longum formantia, parte antica patentissima, oblique oblonga, superne angustata, obtusiuscula acutiusculave, longius subulato-apiculata, leviter convexa, 5-nervia, c. 0.575 cm., margine antico (partis liberae) 0.975—1 cm. longa, basi (partis liberae) 0.65 cm. lata. Petala oblique lanceolato-spathulata, brevissime acuminata, acuta, superne margine papillosa, convexa, 1-nervia, c. 0.55 cm. longa, 0.14—0.16 cm. lata. Labellum subsimplex, pedi gynostemii gynostemioque adpressum, inexplanatum gynostemium vix superans, apice reflexo trilobulum, inferne longitudine c. 0.6 cm. pedi gynostemii adnatum, inconspicue sigmoideum, concavum, subtus convexum, 5-nervium, inexplanatum c. 1.2 cm. longum, explanatum sublineare, medio subconspicue constrictum, c. 1.35 cm. longum, medio 0.125 cm., superne 0.225 cm. latum, parte libera 0.7 cm. longa, lobulis lateralibus obtusangule triangulis convexis papillosis, lobulo intermedio reflexo, sinibus obtusangulis a lobulis lateralibus separato, triangulo, brevissime acuminato, acuto, c. 0.1 cm. longo. Gynostemium a dorso compressum, oblongo-quadrangulum, dorso convexum, c. 0.17 cm. longum, clinandrio excavato transverso, filamento arcuato, subulato, auriculas rotundato-triangulas vix apiculatas extus convexas superante. Anthera cucullata, antice plana quinquangularis, apice truncata papillosaque, c. 0.125 cm. lata. Pollinia 4, in corpuscula 2 oblique subovata supra convexa subtus leviter concava unita. Stigma semiellipticum, apice truncatum. Pes gynostemii ovario parallelus, linearis, concavus, longitudine 0.63 cm. labello adnatus, c. 0.95 cm. longus. Ovarium pedicellatum clavatum, 5-costatum, costis superne cellulosis, c. 1.25 cm. longum.

Dutch New-Guinea: In the northern part, ridge of Hellwig-mountains, 2600 m., forest. (A. PULLE n. 886 (type), January 1913; "flowers light green, column and lip dark green, the latter with a red tip"). Mountain ridge north of Carstensz-mountains, bivouac B, 1330 m. (L. A. C. M. DOORMAN n. 9, July—August 1914; "yellowish green, lip dark green with a red tip"). Same locality, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 10, July—August 1914). Foot of Doorman-top, 3200 m., sheltered ravine with high Conifers, epiphytical. (H. J. LAM n. 1776, 29 October 1920; "roots violet, leaves rather dark green, scarcely suffused with violet, flowers light green or greenish white, column green, tip orange" (lip?). Ridge to Doorman-top, 3000 m., open ridge with a few trees, epiphytical. (H. J. LAM n. 1833, 30 October 1920; "pseudobulbs violet brown, leaves green, sepals and petals very light green, lip light green with an orange tip, column light green, ovary very light green"). Same locality, 2480 m., moss-green forest, epiphytical. (H. J. LAM n. 1950, 11 November 1920; "pseudobulbs red-brown, leaves fleshy, dark green above, violet beneath, petiole violet brown, sepals and petals pale green, transparent, lip base pale green, rest dark green with a brick red tip, column dark green, ovary pale green, transparent"; n. 1951, 11 November 1920; "pseudobulbs brown, leaves green, often reddish violet above, light green beneath, flowers pale green, transparent, upper half of lip green with a more or less dark yellow tip, column green with a light green tip").

My present opinion is that this plant is specifically distinct from *D. frigidum* Schltr., with which I identified it before. The ovary is 5-ribbed and not papillose, whereas it has been described in SCHLECHTER's species as 3-ribbed and densely papillose.

The numbers cited above show all some slight differences in the dimensions of the vegetative organs and flowers and as it seems in the colouring, but with the material at hand I have not succeeded in distinguishing varieties.

Description only from PULLE n. 886.

Dendrobium cellulosum J. J. S. n. sp.

Tab. LXVII, 77.

Pusillum, caespitosum. Rhizoma abbreviatum, ramosum, radicibus longissimis. Pseudobulbi appromati, conici, inter nodos 2 maximos constricti, c. 0.6—1 cm. longi, 0.4—0.3 cm. diam., initio vaginis inclusi, 3-folii. Folia lanceolata ad lineari-lanceolata, oblique obtusa saepeque subapiculata, in utraque parte canaliculae convexa, subtus obtusangule convexa cum costa media prominente, margine cartilagineo praesertim apice minutissime denticulata, supra impresse punctata, rigide carnosa, folium infimum brevissimum latissimumque, folium superum longissimum angustissimumque, c. 1—1.5—2.1 cm. longa, 0.4—0.4—0.27 cm. lata; vaginae basi tubulosae, ceterum conduplicato-canaliculatae, prominenter nervosae, vagina folii ultimi longissima petioliformisque, ad c. 0.8—1.3—1.5 cm. longae. Inflorescentiae 1—2, brevissimae, 1—2-florae, pedunculo abbreviato, nonnullis vaginulis superne accrescentibus et in bracteas vergentibus donato. Bracteae rachidem amplectentes, ovatae, acutae, lateraliter compresse subulato-acuminatae, carinatae, concavae, 3-nerviae, membranaceae, c. 0.55 cm. longae. Flores majusculi, c. 1.85 cm. lati, 2.3 cm. longi, sepalis dorso sparse furfuracee puncticulatis petalisque patentissimis. Sepalum dorsale erectum, apice recurvum, convexum, oblongum, obtusum, dorso breviter conico-apiculatum, 3(—5)-nervium, c. 1 cm. longum, 0.375 cm. latum. Sepala lateralia lacinia longissima angustissima ad pedem gynostemii decurrentia, marginibus anticis longitudine c. 0.525 cm. connata, mentum longissimum ovario parallelum superne tenuiter calcariforme leviter a dorso compressum retuso-bilobulum formantia, usque ad apicem menti c. 2.2 cm. longa, basi bene 1.5 cm. metientia, parte libera patentia, angulum acutum facientia, oblique triangulo-oblonga, obtusa, conico-apiculata, in utraque parte canaliculae longitudinalis convexa, costa media dorso versus apicem carinata, 5-nervia, margine superne papillosa, c. 1.9 cm. longa, basi fere 1.1 cm. metientia, supra basin 0.575 cm. lata. Petala oblique spathulato-lanceolata, obtusiuscula, minute apiculata, margine superne dense papillosa, leviter concava, 3-nervia, c. 1 cm. longa, superne 0.23 cm., inferne 0.15 cm. lata. Labellum pedi gynostemii adpressum et eo longitudine c. 0.8 cm. adnatum, gynostemium superans, lineare, concavum, nudum, carnosulum, 5-nervium, apice 3-lobulum papillosumque, lobulis lateralibus rotundato-obtusangulis, lobulo intermedio abrupte recurvo, cum lobulis lateralibus angulos obtusos faciente triangulo brevissime acuminato acuto, totum explanatum c. 2 cm. longum, parte libera 1.4 cm. longa, basi paulo contracta 0.225 cm., ad lobulos laterales 0.3 cm. lata, lobulo intermedio c. 0.16 cm. longo 0.125 cm. lato. Gynostemium brevissimum, crassum, dorso convexum, c. 0.225 cm. longum, clinandrio excavato transverse subovali, margine postico subrepandulo vel sublobulato, filamento arcuato lineari obtuso basi paulo dilatato, auriculis quadrangulis truncatis. Anthera cucullata, antice plana quinquangulataque, apicem versus paulo angustata truncata et fascia apicali latiuscula

puberula, dorso rotundata cum gibbo parvo, c. 0.2 cm. lata. Pollinia 4, in corpuscula 2 oblique ovata supra convexa subtus plana unita, c. 0.12 cm. longa. Stigma concavum, semiovale, basi rotundatum, apice truncatum. Pes gynostemii ovario adpressus, linearis, tenuis, canaliculatus, cum costula longitudinali inconspicua, in c. 0.5 cm. infra apicem glandula longitudinali membrana obtecta donatus, membrana apice longitudine 0.375 cm. lineari-oblongo-excisa et basi dente parvo obtuso instructa, c. 1.45 cm. longus. Ovarium pedicellatum clavatum, curvulum, trigonum, angulis costatum, 6-sulcatum, minute celluloso-papillosum, sparse furfuraceo-puncticulatum, c. 1.85 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2200 m., epiphytical in moss-grown forest. (H. J. LAM n. 1832, 31 October 1920; "roots lilac, leaves dark green, often dark violet, sepals and petals light greenish yellow, lip rather dark green with an orange tip, column green, ovary light green tip dark green").

This is a near ally of *D. frigidum* Schltr. with which it has in common the papillose ovary. It is, however, a larger plant with much larger flowers, and the petals and lip papillose in the upper part on the margin. Moreover the ovary is not semiterete but regularly trilateral with a winglike rib on the edges and two furrows on the sides.

Description from a specimen preserved in alcohol.

Dendrobium erythrocarpum J. J. S. n. sp.

Tab. LXVII, 78.

Pusillum. Pseudobulbi dense aggregati, crasse fusiformes, c. 0.4—0.6 cm. longi, 3—4-folii, initio vaginis conspicuis nervosis verruculosis membranaceis inclusi. Folia parva, lanceolata ad linearia, margine apicali incurvo, breviter vel subulato-acuminata, basi angustata, omnino distincte serrulata, sicco c. 0.9—2.2 cm. longa, 0.27—0.15 cm. lata; vaginae inferne tubulosae sese amplectentes, quasi cauliformes, apice conduplicato-canaliculatae patentes et quasi petioliformes, c. 0.4—0.7 cm. longae. Inflorescentiae pseudoterminales, abbreviatae, 1-florae (semper?). Bracteae late ovatae, acuminatae, acutae, concavae, dorso verruculosae, 5-nerviae, c. 0.4 cm. longae. Flos mediocris, c. 1.25 cm. latus, 1.95 cm. longus. Sepalum dorsale erectum, oblongum, apicem versus angustatum, obtusum, 3-nervium, c. 0.6 cm. longum, 0.225 cm. latum. Sepala lateralia lacinia elongata oblique late lineari inferne angustata ad pedem gynostemii decurrentia, mentum elongatum ovaria adpressum curvulum superne marginibus anticis longitudine c. 0.4 cm. connatis anguste calcariforme obtusum retusum c. 1.2 cm. longum formantia, parte antica divergentia, patentia, oblique lanceolata, vix falcatula, breviter acute acuminata, 5-nervia, costa media intus leviter sulcata dorso versus apicem prominente c. 0.675 cm., margine antico (partis liberae) 1.37 cm. longa, basi (partis liberae) 0.85 cm. metientia. Petala oblique linearia, acuta, concava, 1-nervia, c. 0.6 cm. longa, 0.07 cm. lata. Labellum subsimplex, pedi gynostemii gynostemioque adpressum, apice erecto paulo dilatato trilobulato gynostemium superans, inferne longitudine c. 0.7 cm. pedi gynostemii adnatum, concavum, subtus convexum, 5-nervium, explanatum lineare, totum 1.7 longum, parte inferiore basin versus angustata, parte libera 1 cm. longa basi fere 0.2 cm., ad lobulos laterales 0.25 cm. lata, lobulis lateralibus rotundatis erosulis, lobulo intermedio erecto, subulato, sinibus rotundatis a lobulis lateralibus sejuncto, acuto, basi erosulo, c. 0.2 cm. longo. Gynostemium a dorso compressum, quadrangulum, dorso convexum, marginibus incurvulis, absque anthera c. 0.22 cm. longum, clinandrio excavato, filamento

oblongo-triangulo obtuso, auriculis latis quadrangulis truncatis apice denticulatis. Anthera cucullata, quadrangula, apice conspicue producta incurvula rotundata et adpresse puberula, dorso bilobula, c. 0.16 cm. lata, 0.175 cm. longa. Pollinia 4, angusta, sublinearia, in corpuscula 2 oblonga supra convexa subtus subplana unita, c. 0.12 cm. longa. Stigma minusculum, suborbiculare. Pes gynostemii ovario adpressus, incurvulus, linearis, canaliculatus, supra medium glandula longitudinali angusta membrana apice longitudinaliter lineari-excisa obtecta instructus, c. 1.2 longus. Ovarium pedicellatum clavatum, 6-costatum, costa postica rotundato-convexa, costis sepalis lateralibus oppositis conspicuis acutis, costis 3 petalis labelloque oppositis minoribus, c. 1.5 cm. longum. Capsula flore marcido coronata, obovoidea ad subglobosa, 3-costata, c. 0.65—1.1 cm. longa.

Dutch New-Guinea: In the northern part, foot Doorman-top, 3250 m., open slope between rocks, epiphytical. (H. J. LAM n. 1603 (type), 17 October 1920; "pseudobulbs yellowish green, leaves dark green, suffused with violet, flowers orange, column with a greyish tip, fruit and pedicel beautifully shining dark red"; n. 1686, 21 October 1920, "fruit reddish violet with a a little orange, pedicel orange with a little violet").

Amongst the species with orange flowers only *D. Dekockii* J. J. S. has the petals equally narrow. That species differs however, in the falcate lateral sepals and the abruptly recurved tip of the lip. It recalls one of *D. caespitificum* Ridl., but that species has two-leaved pseudobulbs, an acuminate dorsal sepal, linear spathulate petals and a much shorter lip.

Description from herbarium and flowers preserved in alcohol.

Dendrobium igneoviolaceum J. J. S. n. sp.

Tab. LXVIII, 79.

Rhizoma breve, radicibus tenuibus. Pseudobulbi aggregati, cylindrici, apice contracti, c. 3-nodes, c. 2.5 cm. longi, 0.45—0.5 cm. diam., 2(—3)-folii, initio vaginis tubulosis verruculosis superioribus accrescentibus tecti. Folia erecta, anguste linearia, semiteretia, supra canaliculata, subtus convexa, acuta, rigida, c. 13—15 cm. longa, 0.14—0.16 cm. lata; vaginae tubulosae, sese amplectentes, ad c. 2.5—3 cm. longae. Inflorescentiae pseudoterminales, brevissimae, 1-florae. Bractea basi tubulosa, ceterum concava, acuminata, extus verruculosa, membranacea, c. 1.2 cm. longa. Flos majusculus, usque ad apicem sepalorum lateralium c. 2.85 cm. longus, sepalis dorso ovarioque pedicellato parce minutissime furfuraceo-puncticulatis. Sepalum dorsale (basi tantum adest) 5-nervium, basi bene 0.4 cm. latum. Sepala lateralia cum pede gynostemii mentum elongatum ovario arcte adpressum marginibus anticis longitudine c. 0.625 cm. connatis anguste calcariforme leviter a dorso compressum obtusum retusum subrectum c. 1.6 cm. longum formantia, erecto-patentia, anguste oblique triangula, marginibus incurvis longe subulato-acuminata, acutissima, basi in laciniam oblique oblongo-triangulam ad pedem gynostemii decurrentem producta, 7-nervia, costa media praesertim superne canaliculata, c. 1.5 cm. longa, margine antico (absque parte inferiore calcar formante) 2.5 cm. metientia, basi (partis liberae) 1.4 cm. lata. Petala parallela, gynostemium labellumque obtegentia, oblique lanceolata, subulato-acuminata, margine minute papillosa, 3-nervia, c. 1.1 cm. longa, fere 0.3 cm. lata. Labellum longitudine c. 1 cm. pedi gynostemii adnatum, ceterum eo et gynostemio adpressum, concavum, lineare, apicem versus sensim dilatatum, marginibus superne incurvis canaliculato-subulato-acuminatum, apice non recurvo gynostemium superans, subtus convexum, 5-nervium,

explanatum apice vix 3-lobulum, minutissime erosulum, lobulis lateralibus rotundatis, lobulo intermedio sinibus leviter rotundatis a lobulis lateralibus separato, subulato, acuto, totum c. 2.6 cm. longum, parte libera 1.63 cm. longa, basi 0.26 cm., superne 0.5 cm. lata, acumine 0.3 cm. longo. Gynostemium breve, a dorso compressum, dorso convexum, cum sulco longitudinali, c. 0.3 cm. longum, filamento elongato subulato, arcuato, auriculis porrectis latis rotundatis erosulis. Anthera cucullata, antice plana, transverse quinquangularis, apice leviter rotundato-truncata hirtellaque, c. 0.23 cm. lata. Pollinia 4, in corpuscula 2 obovata supra convexa subtus plana unita, c. 0.15 cm. longa. Stigma conspicuum, suborbiculare, apice truncatum. Pes gynostemii ovario adpressus, linearis, canaliculatus, intus costula inconspicua convexa dorso sulco instructus, c. 1.65 cm. longus. Ovarium pedicellatum c. 1.9 cm. longum, alato-quinquangulare, alis apicem versus dilatatis undulatisque, facie mentum versus spectante costa humiliore instructum.

Dutch New-Guinea: In the northern part, mountain ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN nrs. 12 (type) and 13, July—August 1914; "light violet, lip dark violet with a red tip"). Ridge to Doorman-top, 1410 m., in open low *Vaccinium* forest, epiphytical. (H. J. LAM n. 1430, 30 September 1920; "roots light violet, pseudobulbs dark brown light greenish yellow when young, leaves dark green, sepals and petals violet, lip violet brown with an orange coloured tip, column violet with a green tip").

In the long very narrow leaves this species agrees with *D. rhaphiotis* Schltr., it differs however in the narrow subulate acuminate petals, the subulate acuminate apex of the lip and the frilled wings of the ovary.

Near allies of these two species are further *D. tenuicalcar* J. J. S., *D. quinquecostatum* Schltr., *D. dryadum* Schltr., and perhaps *D. Hellwigianum* Krzl. which all of them, however, possess broader leaves.

The description has been planned only after DOORMAN n. 12, of which the material bore only one somewhat injured flower preserved in alcohol.

LAM n. 1430, consisting in dried specimens and one flower preserved in alcohol, differs in the larger flower, measuring 3.6 cm. from the apex of the mentum to the top of the lateral sepals. The dorsal sepal of this is ovate subulate acuminate.

Dendrobium monogrammoides J. J. S. n. sp.

Tab. LXVIII, 80.

Pusillum. Pseudobulbi approximati, elongato-conici, apice attenuati, paucinodes, inter nodos 2 maximos constricti, c. 0.7—1.1 cm. longi, 0.17—0.26 cm. diam., 3—4-folii, initio vaginis tubulosis mox fatiscentibus fibras relinquentibus tecti. Folia anguste linearia, semiteretia, acuta, canaliculata, c. 1.5—3.5 cm. longa, 0.075 ad fere 0.1 cm. lata; vaginulae tubulosae, prominenter nervosae, inferne sese amplectentes, apice liberae petioliformes folio tenuiores, ad c. 0.7—1.5 cm. longae. Inflorescentiae 1—2 pseudoterminales, erectae, brevissimae, 1—2-florae, pedunculo abbreviato nonnulis vaginulis oblique infundibuliformibus acuminatis dorso carinatis superne accrescentibus et in bracteas similes ovatas acuminatas carinatas concavas ad c. 0.27 cm. longas vergentibus omnibus valde approximatis imbricantibusque tecto. Flores inter minores, erecti, c. 1.2 cm. longi, sepalis petalisque explanatis. Sepalum dorsale rhombeum, acutum, acute apiculatum, 3-nervium, c. 0.6 cm. longum, 0.2 cm. latum. Sepala lateralia lacinia oblique

oblongo-triangula ad pedem gynostemii decurrentia, mentum longum basi ovario adpressum leviter incurvulum marginibus anticis longitudine 0.35 cm. connatis anguste calcariforme obtusum subretusum c. 0.7 cm. longum formantia, parte antica erecto-patentia, oblique oblongo-triangula, falcatula, longius subulato-acuminata, in utraque parte costae mediae convexa, dorso carinata, 4-nervia, c. 0.66 cm. longa, margine antico (partis liberae) 0.87 cm. metientia, basi 0.5 cm. lata. Petala erecto-patentia, oblique subspathulato-linearia, acute acuminata, apice minutissime erosula, concava, 1-nervia, c. 0.63 cm. longa, 0.1 cm. lata. Labellum longitudine c. 0.475 cm. pedi gynostemii adnatum, deinde eo et gynostemio adpressum, medio leviter obtusangule recurvulum, apice arcuato-recurvo gynostemium non superans, explanatum bene longius, lineare, concavum, antice paululum dilatatum, trilobulatum, lobulis lateralibus rotundatis, lobulo intermedio imposito triangulo-subulato acuto, nudum, 5-nervium, explanatum fere 1.1 cm., parte libera fere 0.7 cm. longum, inferne 0.125 cm., superne 0.18 cm. latum, acumine 0.15 cm. longo. Gynostemium rectum, oblongo-quadrangulum, dorso obtusangule convexum, c. 0.17 cm. longum, clinandrio excavato transverso, filamento arcuato lineari-subulato, auriculis paulo brevioribus irregulariter quadrangulis obtusis parce denticulatis concavis. Anthera cucullata, antice visa transverse ovalis, apice leviter exciso-truncata et minute papillosa, bene 0.1 cm. lata. Pollinia 4, in corpuscula 2 oblique obovata suprà convexa subtus plana unita, c. 0.075 cm. longa. Stigma obovato-orbiculare, apice truncatum, margine elevatum. Pes gynostemii ovario adpressus, praesertim apice incurvulus, linearis, canaliculatus, parte labello adnata longitudinaliter excavata et dimidio inferiore membrana obtecta cum glandula longitudinali oblonga in excavatione, totus c. 0.75 cm. longus. Ovarium pedicellatum subclavatum, ovario 12-costato, pédicello quinquangulari costa sexta obsoleta.

Dutch New-Guinea: Mamberamo. ridge to Doorman-top, eastern slope, 1420 m., epiphytical in low *Vaccinium*-forest. (H. J. LAM n. 1438 (type), 1 October 1920; "pseudobulbs light green, afterwards purple brown, leaves light green, sepals and petals light yellow-green. lip orange, column and ovary light yellow-green"). Same locality 1450 m., epiphytical in nearly flat swampy moss-grown forest. (H. J. LAM n. 1581, 12 October 1920; "pseudobulbs purple brown, leaves light green, flowers greenish white, lip green with orange tip, column light green with a pale blue tip").

Three closely allied species have hitherto been described, viz. *D. theionanthum* Schltr., *D. pumilio* Schltr. and *D. caespitificum* Ridl. which all agree in possessing very narrow leaves. From *D. pumilio* Schltr. the new species differs in the colour, the distinctly 3-lobed lip, the 12-ribbed ovary, from *D. theionanthum* Schltr. in the colour, the slightly curved mentum, the not very short column, the 12-ribbed ovary and the 5-angular pedicel, and from *D. caespitificum* Ridl. in the 3—4-leaved pseudobulbs, usually 2-flowered inflorescences and the much shorter mentum.

Description from herbarium and materials preserved in alcohol.

Sect. Platycaulon.

Dendrobium remiforme J. J. S. in Fedde Rep. XII (1913), 111; in Nova Guinea XII (1916), 316, t. CXIV, 209.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN, liv. pl. cult. in Hort. Bog. sub n. 79).

Sect. Pedilonum.

Dendrobium Smilliae F. v. Muell. Fragm. VI (1867—'68), 94; etc.

var. **Hollrungii** J. J. S. in Nova Guinea XII (1916), 338; etc.

Island Koeroedoe (North New-Guinea). (R. F. JANOWSKY 1914, KORNASI, liv. pl. cult. in Hort. Bog. sub n. 41).

Dendrobium capituliflorum Rolfe in Kew Bull. 1901, 46; Krzl. in Pflanzenr. IV. 50. II. B, 21 (1910), 136; Schltr. Orch. D. Neu-Guinea (1912), 506. — *D. confusum* J. J. S. in Bull. Dép. Agric. Ind. néerl. n. XLV (1911), 5; in Nova Guinea VIII (1911), 570, t. XCIV B. — *D. constrictum* J. J. S. pp. in Nova Guinea VIII (1908), 79, t. XXVII, 87a.

var. **viride** J. J. S. n. var.

Folia subtus viridia.

Dutch New-Guinea: In the northern part, Humboldt-bay, Hollandia. (K. GJELLERUP, liv. pl. cult. in Hort. Bog. sub n. 276. Mamberamo. (R. F. JANOWSKY, 1914, KORNASI, liv. pl. cult. in Hort. Bog. sub n. 143; A. C. TH. THOMSEN, without n°., 5 May 1914; W. FEUILLETAU DE BRUYN n. 163, 22 October 1914). Same locality, Pionier-bivouac. (H. J. LAM, 1920, liv. pl. cult. in Hort. Bog. sub nrs. 182 and 243).

Dendrobium maritimum J. J. S. n. sp.

Tab. LXVIII, 81.

Caules elongati, flexuosi, partes adsunt ad c. 22 cm. longae, internodiis c. 0.6—1 cm. longis. Folia patentia ad patentissima, lanceolata, apicem versus angustata, aequaliter vel inaequaliter acute bidentata, sicco rigide coriacea, c. 2.8—3.4 cm. longa, 0.5 cm. lata; vaginae tubulosae. Inflorescentiae ad nodos caulium defoliatorum, brevissimae, 1—7-florae, pedunculo c. 0.25 cm. longo, nonnullis vaginulis brevibus donato, rachide ad c. 1 cm. longa. Bracteae ovato-triangulae, ad c. 0.2 cm. longae. Flores mediocres, c. 2.1 cm. longi, sepalo dorsali petalisque erectis, sepalis lateralibus porrectis, parallelis, cum mento angulum obtusum facientibus. Sepalum dorsale cum ovario angulum acutum faciens, elliptico-oblongum, obtusum, concavum, 5-nervium, c. 1.1 cm. longum, 0.375 cm. latum. Sepala lateralia lacinia oblique oblonga concava c. 1.15 cm. longa 0.5 cm. lata ad pedem gynostemii decurrentia, ima basi etiam labello adnata, mentum reversum recurvulum marginibus anticis longitudine c. 1.1 cm. connatis calcariforme conicum obtusum c. 1.1 cm. longum formantia, parte antica porrecta, oblonga, apicem versus angustata, subacuta, concava, 7-nervia, c. 1 cm. longa, 0.55 cm. lata, tota falcato-lanceolata, c. 2.1 cm. longa. Petala subspathulato-elliptica, obtusa, vix apiculata, concava, 3-nervia, c. 1 cm. longa, 0.35 cm. lata. Labellum simplex, basi longitudine c. 0.33 cm. pedi gynostemii adnatum, eo parallelum, gynostemium superans, spathulatum, 5-nervium, inexplanatum c. 1.7 cm., explanatum 1.9 cm. longum, ungue oblongo, concavo, lamina rhombeo-lanceolata, acuta, basi incrassatione U-formi instructa, valde concava, subtus convexa, c. 1.3 cm. longa, 0.45 cm. lata. Gynostemium breve, a dorso compressum, dorso alte excisum, c. 0.3 cm. longum, clinandrio alte excavato, filamento curvato, subulato, auriculis paulo brevioribus, triangulis, margine postico longissimis, acutis, subirregulariter marginatis. Anthera cucullata, apice lato incurva truncata vel melius obtusissima, basi bilobula, fere 0.2 cm. lata. Pollinia 4, oblonga, supra convexa,

c. 0.1 cm. longa. Pes gynostemii reversus, linearis, canaliculatus, c. 1.1 cm. longus. Ovarium 6-sulcatum, c. 0.6 cm. longum, cum pedicello c. 0.8 cm. longo sigmoideum.

Schouten Islands: Biak, northern coast, Wari, near the sea. (W. FEUILLETAU DE BRUYN n. 395, 8 September 1915; "stem c. 35 cm. long, flowers orange").

Near *D. fulgidum* Schltr. but with much smaller leaves, much shorter few-flowered inflorescences, ovate-triangular bracts, larger flowers, subspathulate petals, the lip adnate at the base to the column foot and provided with a U-shaped thickening. Moreover *D. fulgidum* Schltr. is a mountain-plant.

Description from herbarium.

Sect. Calyptrochilus.

Dendrobium Baeuerlenii F. v. Muell. et Krzl. in Österr. Bot. Zeitschr. XLIV (1894), 163; in Pflanzenr. Heft 45 (1911), 123, Fig. 7 D—F; J. J. S. in N. Guinea XII (1913), 58, t. XVI, 46.

Dutch New-Guinea: In the northern part, Mamberamo, Prauwen-bivouac, 70 m., epiphytical. (H. J. LAM n. 445, June 1920).

Dendrobium mitriferum J. J. S. in Bull. Dép. Agr. Ind. néerl. XXXIX (1910), 10; in N. Guinea VIII (1912), 571, t. XCIV C; etc.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2850 m., epiphytical in forest. (H. J. LAM n. 1824, 30 October 1920). Same locality, 2550 m., moss-grown forest, generally epiphytical, sometimes terrestrial. (H. J. LAM n. 1963, 11 November 1920).

Dendrobium sacculiferum J. J. S. n. sp.

Tab. LXVIII, 82.

Caules elongati, ramosi, radicantes, tenues, flexuosi, sicco angulato-costati, c. 33 cm. longi, internodiis ad c. 1.4 cm. longis, superioribus descrescentibus. Folia parva, patentissima, oblongo-ovata, acute apiculata, margine praesertim apice minute cartilagineo-crenulata, basi semitorta, nervis c. 5 majoribus nonnullisque minoribus interpositis sicco subtus prominentibus non crebis, rigida, sicco c. 0.75—0.95 cm. longa, 0.225—0.325 cm. lata; vaginae tubulosae, angulato-costatae, apice truncatae, verrucosae. Inflorescentiae e nodis caulium defoliatorum, brevissimae, cauli adpressae, 1-florae, pedunculo abbreviato, nonnullis vaginulis donato. Bracteae late ovatae, acuminatae, carinatae, verruculosae, c. 0.23 cm. longae. Flores mediocres, bene 2 cm. longi, sepalis petalisque dorso sparse furfuraceo-punctatis. Sepalum dorsale late ellipticum, obtusum, leviter convexum, 5-nervium, c. 0.9 cm. longum, 0.6 cm. latum. Sepala lateralia lacinia oblique triangula ad pedem gynostemii decurrentia, mentum conspicuum ovario adpressum conicum, obtusum subretusum et anteposito-bilobulatum dorso canaliculatum bene 1 cm. longum formantia, margine antico omnino libera sed fere usque ad apicem contigua, oblique triangula, obtusa, inconspicue obtuse apiculata, margine postico rotundata, concava, 5-nervia, c. 0.97 cm., margine antico 1.6 cm. longa, basi bene 1.3 cm. lata. Petala suboblique obovato-rhombea, obtusa, apice vix erosula, 3-nervia, c. 0.85 cm. longa, 0.47 cm. lata. Labellum gynostemium aequans, spathulatum, concavum, extus valde convexum, ungue tota longitudine pedi gynostemii adnatum et basi breviter obtuse sacculato-productum, fere a medio dilatatum et obtusangule recurvum, apice subrectangule cucullato-inflexum, cucullo rotundato longitudinaliter plicato margine apicali subtrilobulato-truncato et subulato-pectinato cum dentibus ex-

terius decrescentibus, ecallosum, 5-nervium, explanatum c. 1.3 cm. longum, ungue lineari canaliculato c. 0.65 cm. longo 0.3 cm. lato, lamina e basi late cuneata antice rotundata c. 0.7 cm. longa 0.85 cm. lata, cucullo 0.33 cm. longo. Gynostemium rectum, transverse quadrangulum, a dorso compressum, dorso convexum, in utraque stigmatis parte obtusangule dilatatum et margine recurvo lateraliter visum sublobulatum, c. 0.26 cm. longum, clinandrio excavato, transverso, angusto, margine postico semiorbiculari-exciso et utrinque in lobulum subtridentatum exeunte, filamento arcuato, subulato, dorso transverse ruguloso, auriculis crassiusculis, rotundato-lobuliformibus. Anthera cucullata, antice visa transverse quadrangula, apice breviter producto incurvula leviter rotundata et fascia lata puberula, c. 0.22 cm. lata. Pollinia 4, a dorso compressa, in corpuscula 2 oblique obovata supra convexa subtus leviter concava unita, c. 0.15 cm. longa. Stigma transverse semiorbiculare, apice truncatum, basi rotundatum. Pes gynostemii ovario adpressus, basi excepta ungui labelli adnatus, subrectus, linearis, leviter canaliculatus, $^1/_3$ parte superiore cavus et in fundo tubi glandula longitudinali lineari donatus, membrana tegente apice longitudine c. 0.17 cm. excisa, c. 1.15 cm. longus. Ovarium pedicellatum clavatum, apice obliquum, rotundato-trigonum, 6-sulcatum, sparse furfuraceo-punctatum, c. 1.65 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1410 m., epiphytical in low thin moss-grown *Vaccinium*-forest. (H. J. LAM n. 1422, 30 September 1920; "leaves bright green, sheaths brownish green, flowers beautifully dark red, apex of column bluish violet, ovary dark red, bract light brown").

This species is well characterized by the small oblong ovate leaves with remote nerves, the colour of the flowers, and the claw of the lip being sacculate at the base.

Description from a dried specimen and a flower preserved in alcohol.

Dendrobium Vannouhuysii J. J. S. in Bull. Dép. Agr. Ind. néerl. XLV (1911), 6; in Nova Guinea VIII (1911), 573, t. XCV A; XII (1913), 63.

var. **rhombipetalum** J. J. S. n. var.

Differt a forma typica petalis rhombeis basi non spathulato-contractis.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3250 m., open nearly flat country, terrestrial. (H. J. LAM n. 1640, October 1920; "stem and leaves dark violet, shining, flowers bright orange, fruit and pedicel violet-orange"). Doorman-top, 3300 m., everywhere on open spots. (H. J. LAM n. 1760, 25 October 1920; "leaves dead green, flowers pale yellowish").

Dendrobium Lamii J. J. S. n. sp.

Tab. LXIX, 83.

Caules approximati, elongati, ramosi radicantesque, tenues, flexuosi, angulati, c. 45 cm. longi, internodiis in caulibus primariis ad c. 2.4 cm. longis, superioribus multo minoribus ad 0.3—0.15 cm. decrescentibus. Folia parva, patentissima, lanceolata ad ovato-lanceolata, $^1/_6$—$^2/_5$ partibus apicalibus leviter contracta, breviter oblique obtusa vel acutiuscula, subulato-apiculata, superne minute cartilagineo-denticulata, supra in utraque parte canaliculae longitudinalis convexa, subtus convexa, carnosula, c. 1—1.15 cm. longa, 0.2—0.37 cm. lata; vaginae tubulosae, apice truncatae, longitudinaliter costatae, in costis verruculosae. Inflorescentiae e nodis caulium defoliatorum, brevissimae, erectae, 1—2-florae, pedunculo nonnulis vaginulis tubulosis verruculosis superne accrescentibus donato, cum rachide c. 0.25 cm. longo. Bracteae rachidem amplectentes, late triangulae, acuminatae, valde concavae, dorso carinatae verruculo-

saeque, c. 5-nerviae, c. 0.475 cm. longae. Flores vix mediocres, lateraliter compressi, c. 2 cm. longi, sepalis dorso parce furfuraceo-puncticulatis. Sepalum dorsale ovarium continuum, subovatum, superne angustatum, obtusum, 5-nervium, bene 0.9 cm. longum, 0.52 cm. latum. Sepala lateralia lacinia brevi oblique triangula ad pedem gynostemii decurrentia, marginibus anticis longitudine c. 0.6 cm. connata, mentum deorsum spectans conicum lateraliter compressum apice leviter contractum obtusum dorso subsigmoideum c. 1.13 cm. longum formantia, oblique subovato-triangula, obtusa, breviter apiculata, 7-nervia, costa media intus canaliculata dorso obtuse prominente, bene 1 cm., margine antico 1.57 cm. longa, basi 1.2 cm. lata. Petala oblonga, margine apicali incurvula, obtusa, inferne subcuneato-angustata, 3-nervia, c. 0.875 cm. longa, 0.37 cm. lata. Labellum gynostemio cum anthera paulo brevius, spathulatum, concavum, extus valde convexum, erectum, sigmoideum, ungue $^3/_5$ partibus superioribus pedis gynostemii adnatum, circiter dimidio superiore dilatatum, apice subrectangule cucullato-inflexum, cucullo rotundato conspicue longitudinaliter triplicato margine apicali subtruncato medio anguste serrato cum dentibus utrinque decrescentibus, ecallosum, 5-nervium, parte libera a pede gynostemii sinibus satis latis rotundatis separata, explanatum c. 1.2 cm. longum, ungue canaliculato anguste cuneato-oblongo c. 0.55 cm. longo, lamina transverse subrhombea c. 0.63 cm. longa 0.9 cm. lata, cucullo c. 0.37 cm. longo. Gynostemium breve, crassum, dorso convexum, in utraque stigmatis parte obtusangule dilatatum, clinandrio alte excavato, transverse oblongo, margine postico exciso et utrinque in dentem triangulum acutum minute denticulatum exeunte, filamento curvulo, subulato, dorso transverse ruguloso, auriculis crassis obtusis. Anthera cucullata, transverse rotundato-quadrangula, apice incurvulo truncata et fascia lata puberula, c. 0.26 cm. lata. Pollinia 4, in corpuscula 2 oblique ovalia a dorso compressa supra convexa subtus leviter concava unita, c. 0.13 cm. longa. Stigma subsemiorbiculare, margine inferiore rotundatum, apice truncatum. Pes gynostemii apice incurvulus, linearis, leviter canaliculatus, dimidio superiore ungui labelli adnatus et tubuloso-excavatus cum glaudula longitudinali lineari in fundo tubi, membrana apice oblongo-excisa, c. 1.1 cm. longus. Ovarium pedicellatum clavatum, sigmoideum, 6-sulcatum, apice obliquum, parcissime furfuraceo-puncticulatum, c. 2.2 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2850 m., sheltered saddle, epiphytical in light forest. (H. J. LAM n. 1826, 30 October 1920; "roots light brown, leaves dark green above, light green beneath, with the margin, midrib beneath and sheath dark violet, sepals and petals beautifully bluish violet, lip with the apex very dark violet, column light bluish violet, fruit beautifully bluish violet"). Same locality, 2550 m., epiphytical in moss-grown forest. (H. J. LAM n. 1992, 13 November 1920; "flowers beautifully dark violet, column dirty rosy with the apex salmon-coloured").

Amongst the small leaved species this is well characterized by the lateral sepals dilated at the base into a rather small lobe, the broad lip of which the free portion is separated from the column-foot by conspicuous sines and the form of the anther.

Description from herbarium and materials preserved in alcohol.

Dendrobium verruculosum Schltr. Orch. D. N. Guinea (1912), 517.

Dutch New-Guinea; In the northern part, ridge to Doorman-top, 1450 m., epiphytical. (H. J. LAM n. 1577, 11 October 1920; "leaves shining green above, dead green beneath, sheaths dark violet, bracts violet brown, flowers bright orange").

I take this to be a weak specimen of SCHLECHTER's *D. verruculosum* with which it agrees well in the characteristics of the flowers.

Dendrobium pseudopeloricum J. J. S. n. sp.

Tab. LXIX, 84.

Rhizoma elongatum, ramosum, repens, tenue, teres, initio foliatum, internodiis c. 0.5—1.2 cm. longis, radicibus aequicrassis singulis longis. Caules c. 1.3—2 cm. distantes, adscendentes, cum rhizomate angulum acutum facientes, tenuiter fusiformes, simplices, pauci (5—6)-nodes, 5—6-folii, c. 1.2—1.5 cm. longi, 0.2—0.24 cm. diam. Folia inarticulata, patentissima, recurvula, lanceolato-triangula, longe tenuiter acute subulato-producta, basi dilatata fere amplexicaulia, rigide coriacea, canaliculata, ad c. 0.825 cm. longa, explanata ad fere 0.3 cm. lata; vaginae tubulosae, prominenter nervosae. Inflorescentiae e nodis caulium, erectae, cauli adpressae, 1-florae, pedunculo c. 0.35 cm. longo, nonnullis vaginulis brevibus tubulosis in bracteam vergentibus donato. Bractea late ovata, acuminata, valde concava, c. 0.45 cm. longa. Flos parvus, c. 1.15 cm. longus, sepalis dorso parce furfuraceo-punctiçulatis. Sepalum dorsale ovale, obtusum, leviter concavum, margine apicali subincurvulum, 5-nervium, c. 0.62 cm. longum, 0.34 cm. latum. Sepala lateralia lacinia oblique oblonga ad pedem gynostemii decurrentia, marginibus anticis longitudine c. 0.23 cm. connata, mentum reversum ovario adpressum rectum oblongum subcylindricum obtusum c. 0.5 cm. longum formantia, parte antica oblique subtrianguło-ovalia, obtusa, apice crasse obtuse conico-incrassata, concava, 5-nervia, c. 0.66 cm., margine antico bene 1 cm. longa, basi 0.66 cm. metientia, parte antica 0.46 cm. lata. Petala quasi labelliformia, oblonga, superne erosula, apice cucullato-incurva, margine apicali recurva laçinulataque, obtusa, leviter concava, 3-nervia, c. 0.55 cm. longa, fere 0.2 cm. lata. Labellum gynostemium vix superans, basi pedi gynostemii longitudine c. 0.3 cm. adnatum, supra basin constrictum, concavum, apice cucullato-inflexum, cucullo rotundato parte inflexa 0.225 cm. longo 2-plicato margine minute angusteque serrulato, 5-nervium, ecallosum, explanatum oblongum, in $^2/_5$ partibus supra basin constrictum, c. 1 cm. longum, parte pedi gynostemii adnata 0.375 cm. longa 0.4 cm. lata, lamina 0.625 cm. longa, basi 0.33 cm., medio 0.525 cm. lata. Gynostemium rectum, a dorso compressum, oblongo-quadrangulum, dorso convexum, subtus concavum, marginibus vix dilatatum, c. 0.37 cm. longum, clinandrio excavato transverse oblongo, filamento arcuato subulato, auriculis latis transverse quadrangulis truncatis subrepandulis. Anthera cucullata, transverse quadrangula, apice incurvulo truncata puberulaque, basi 2-loba, fere 0.2 cm. lata. Pollinia 4, in corpuscula 2 oblique subobovata supra convexa subtus concava unita, a dorso compressa, c. 0.125 cm. longa. Stigma transverse ovale. Pes gynostemii ovario adpressus, oblongus, $^2/_3$ partibus superioribus membrana dimidio superiore sexangulato-excisa obtectus, c. 0.53 cm. longus. Ovarium curvulum, crassiusculum, 6-sulcatum, sparse furfuraceo-puncticulatum, c. 0.7 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2600 m., epiphytical in moss-grown forest. (H. J. LAM n. 1835, 30 October 1920; "roots brown or violet, leaves violet (dark red), flowers base (mentum) pale blue, upwards pale dirty greenish finally pale dirty yellow with a little blue, ovary pale blue").

A very curious little species recalling one somewhat of *D. dichaeoides* Schltr. It has a creeping rhizome, small inarticulate leaves and one-flowered inflorescences. The flowers are typical *Calyptrochilus*-flowers and remarkable on account of the petals being cucullate at the apex just as the lip.

Description from a specimen preserved in alcohol.

Dendrobium convexipes J. J. S. n. sp.

Tab. LXIX, 85.

Caules approximati, elongati, flexuosi, sicco angulato-costati, c. 47 cm. longi, internodiis ad c. 2.5 cm. longis. Folia patentia, superiora patentissima, angusta, subovato-lanceolata, apicem versus sensim angustata, acuta vel anguste obtusa, plerumque longius subulato-apiculata, apice minute cartilagineo-crenulata, basi semitorta, costa media nervisque 1—2 utrinque sicco subtus prominentibus, rigide coriaceo-papyracea, ad c. 5.6 cm longa, 0.775 cm. lata, superiora minora; vaginae tubulosae, internodia vix superantes, apice truncatae antice excisae, leviter verruculosae, atrofusce punctatae. Inflorescentiae e nodis caulium defoliatorum et foliatorum, brevissimae, c. 3—5-florae, pedunculo cum rachide c. 0.8 cm. longo. Bracteae ovatae, acuminatae. Flores mediocres, c. 2.25 cm. longi, sepalis dorso parce furfuraceo-puncticulatis. Sepalum dorsale ovarium continuum, ovatum, obtusum, leviter concavum, 5-nervium, c. 0.6 cm. longum, 0.36 cm. latum. Sepala lateralia lacinia oblique oblongo-triangula ad pedem gynostemii decurrentia, mentum longum reversum basi ovario adpressum deinde leviter incurvulum anguste conicum obtusum dorso alte canaliculatum c. 1.5 cm. longum formantia, marginibus anticis inferne longitudine c. 0.95 cm. connata ceterum contigua, valde oblique triangula, obtusa, concava, c. 5-nervia, costa media dorso prominula, c. 0.7 cm. longa, margine antico 1.9 cm., basi 1.7 cm. metientia. Petala oblique lanceolata, obtusa, superne papilloso-ciliolata, 1-nervia, c. 0.65 cm. longa, 0.16 cm. lata. Labellum basi longitudine c. 0.4 cm. pedi gynostemii adnatum, parallelum pedi gynostemii erectum, eo vix aequilongum, leviter undatum, concavum, subtus convexum, apice cucullato-inflexum, cucullo recurvulo apice rotundato extrorsum 5—7-plicato margine apicali pectinato-dentato cum dentibus marginem versus decrescentibus, ecallosum, 7-nervium, explanatum cuneatum, cucullo obtusangule rotundatum, margine apicali leviter rotundato-truncatum, c. 1.4 cm. longum, ad basin partis liberae 0.3 cm. latum, cucullo 0.3 cm. longo, 0.72 cm. lato. Gynostemium a dorso compressum, quadrangulum, in utraque stigmatis parte obtusangule dilatatum, c. 0.275 cm. longum, 0.325 cm. latum, clinandrio excavato transverse oblongo apice exciso denticulato, filamento curvulo subulato, auriculis quadrangulis retusis antice crassis. Anthera cucullata, antice plana, semiovalis, apice incurvula truncata fascia lata puberula, c. 0.2 cm. lata. Pollinia 4, in corpuscula 2 oblique obovata supra convexa subtus concava unita, c. 0.14 cm. longa. Stigma magnum, concavum, transverse ellipticum. Pes gynostemii elongatus, medio angustissimus, basin apicemque versus paululum dilatatus, apice leviter concavus, ceterum convexus, dimidio superiore intus conspicue convexo-incrassatus et lineari-cavus, membrana apice excisa et medio in dentem triangulum producta, c. 1.5 cm. longus. Ovarium pedicellatum clavatum, leviter sigmoideum, leviter lateraliter compressum, rotundato-trigonum, apice obliquum, 6-sulcatum, parce furfuraceo-punctatum, c. 2.2 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1400—1420 m., epiphytical in low moss-grown *Vaccinium*-forest. (H. J. LAM n. 1423 (type), 30 September 1920; "leaves and sheaths shining dark green-violet, more green and dull beneath, sepals and petals lilac, lip with a lighter apex, column-top whitish lilac"; n. 1424, 30 September 1920).

Differs from *D. brevilabium* Schltr. in the colour, a more slender mentum, ciliolate petals, and the column-foot being strongly convex in the upper half.

Description from herbarium and flowers preserved in alcohol.

Sect. Amblyanthus.

Dendrobium squamiferum J. J. S. in Bull. Dép. Agric. Ind. néerl. XIX (1908), 19; in Nova Guinea VIII (1909), 83, t. XXVIII, 91.

Dutch New-Guinea: In the northern part, Mamberamo, near Prauwen-bivouac, 90 m., swampy forest on bank, epiphytical. (H. J. LAM n. 1054, September 1920).

Dendrobium fuligineum J. J. S. n. sp.

Tab. LXX, 86.

Caules elongati, valde costati, pars adest 13 cm. longa, internodiis c. 1.4 cm. longis, superioribus decrescentibus. Folia lanceolata, apicem versus angustata, acuminata, altius valde oblique acute bidentata, dentibus irregulariter suberosulis, basi caulem $^2/_3$ amplectentia, costa media supra leviter sulcata subtus prominula, papyracea, utrinque minute furfuraceo-puncticulata, c. 7 cm. longa, 1.6 cm. lata; vaginae tubulosae, internodia aequantes, minute furfuraceo-puncticulatae. Inflorescentiae e nodis caulium foliatorum, sessiles, brevissimae, compacte c. 5-florae, rachide c. 0.8 cm. longa. Bracteae latae, suborbiculares, concavae, margine apicali incurvae, utrinque dense furfuraceae, c. 0.5 cm. longae, 0.6 cm. latae. Flores in sectione mediocres, c. 1.85 cm. longi, sepalis carnosulis dorso furfuraceis. Sepalum dorsale ovale, apice brevissime obtuse productum, leviter concavum cum margine incurvo, nervis 7 intus prominulis, bene 1 cm. longum, 0.65 cm. latum. Sepala lateralia lacinia oblique triangula concava ad pedem gynostemii decurrentia, mentum reversum ovario adpressum subconico-oblongum antice rectum dorso apice curvulum obtusum retusum c. 0.7 cm. longum formantia, marginibus anticis omnino libera, oblique ovalia, obtusa, concava, nervis 8 intus partim prominulis, bene 1 cm., margine antico 1.7 cm. longa, basi 0.95 cm. metientia, supra basin 0.7 cm. lata. Petala cuneato-obovata, obtusissima, superne minute erosulo-denticulata, concava, 3-nervia, costa media intus prominula dorso leviter sulcata, bene 1 cm. longa, 0.6 cm. lata. Labellum longitudine c. 0.2 cm. pedi gynostemii adnatum, valde canaliculato-concavum, subtus convexum cum sulco longitudinali, simplex, cuneato-obovatum, apice obtusangule rotundatum cum apiculo brevi, marginibus supra basin minute undulatum, in $^3/_4$ supra basin serrulatum, margine apicali valde incrassatum et transverse rugulosum, intus fascia lata longitudinali carnoso-incrassata in $^2/_5$ partibus supra basin in squamam conspicuam reversam latam bilobam subulato-lacinulatam c. 0.35 cm. longam exeunte, lacinulis extrorsum decrescentibus, 5(—7)-nervium, nervis medio leviter convexo-incrassatis, explanatum c. 1.7 cm. longum, supra basin fere 0.3 cm., superne 0.94 cm. latum. Gynostemium rectum, crassum, dorso applanatum, subtus concavum, c. 0.45 cm. longum, clinandrio transverse oblongo, excavato, margine dorsali alte exciso, filamento longe filiformi-subulato, auriculis conspicuis, quadrangulis, truncatis, apice minute crenulato-erosulis. Anthera cucullata, transverse elliptica, apice obtusangule producta incurvula papillosa, dorso retusa, c. 0.3 cm. lata. Pollinia 4, in corpuscula 2 oblique obovata unita, supra convexa, a latere visa curvula subsemiobovataque, c. 0.15 cm. longa. Stigma angulato-suborbiculare. Pes gynostemii reversus, ovario adpressus, dorso sigmoideus, crassus, parte inferiore gynostemium continuus et leviter canaliculatus, $^2/_3$ partibus superioribus excavato-tubulosus, apice labelli ungui adnatus, ante locum coalitus fisso angusto longitudinali apertus, c. 0.8 cm. longus. Ovarium crassum, rotundato-trigonum, 6-sulcatum, dense furfuraceum praesertim in sulcis, c. 0.8 cm. longum; pedicellus parce furfuraceus, c. 0.3 cm. longus.

Dutch New-Guinea: In the northern part, southwest of Prauwen-bivouac, 200 m., epiphytical in swampy forest. (H. J. LAM n. 1266, 19 September 1920; "leaves dark green, sepals white, petals white dotted orange inside, column white, ovary brownish green").

Allied to *D. sqamiferum* J. J. S. but with the lip less complicate, not hairy and the column also very different.

Description from part of a stem preserved in alcohol.

Pedilochilus Schltr.

Pedilochilus humile J. J. S. n. sp.

Tab. LXX, 87.

Pusillum, caespitificum. Pseudobulbi aggregati, ovoidei, longitudinaliter sulcati, c. 0.5 cm. longi, 0.36 cm. diam., 1-folii. Folium oblongo- ad lanceolato-subellipticum, acutum, basi breviter cuneatum conduplicatumque, apice minute celluloso-crenulatum, supra obtusangule canaliculatum cum lateribus convexis, carnosum, c. 0.9—1.7 cm. longum, 0.5—0.47 cm. latum. Inflorescentiae fasciculatae, 1-florae, pedunculo filiformi, c. 1.2—1.4 cm. longo, vaginulis c. 3 tubulosis superne ampliatis donato. Bractea oblique infundibuliformis, apice oblique truncata, leviter carinata, c. 0.22 cm. longa. Flos mediocris. Sepalum dorsale ex ungue late oblongo ovato-ellipticum, vix acuminatum, acutum, concavum, intus puberulum, dorso ad basin leviter papillosum, ciliolatum, 3-nervium, totum 1 cm. longum, ungue fere 0.3 cm. longo, 0.17 cm. lato, lamina bene 0.7 cm. longa, 0.425 cm. lata. Sepala lateralia e basi breviter oblique unguiculata oblique ovalia, obtusa, obtuse apiculata, concava, margine antico abrupte inflexa extus in flexu carinata ciliolata, margine postico involuta papillosaque, margine sepalum dorsale versus spectante dorso papillosa intus parce puberula, 3-(sub 5-)nervia, tota c. 1.15 cm. longa, 0.625 cm. lata, ungue c. 0.2 cm. longo. Petala unguiculata, valde obliqua, undata, medio oblique excavato-concava, margine postico valde recurvo-convexa, apice recurva, 1-nervia, dorso valde carinata, glabra, explanata ex ungue oblique oblongo supra basin cuneato in laminam oblique deltoideam breviter triangulo-acuminatam acutam margine antico basi abrupte angulato-dilatatam cuneatamque dilatata, tota c. 0.46 longa, ungue 0.125 cm. longo, lamina 0.35 cm. longa, fere 0.3 cm. lata. Labellum porrectum, immobile, ex ungue brevi carnoso incrassatione transversa instructo in laminam conspicuam cymbiformi-concavam trilobulam obovatam marginibus incurvam dilatatum, 5-nervium, nervis 2 utrinque margini approximatis, lobis lateralibus basilaribus oblique oblongis valde falcato-recurvis acutiusculis, lobo intermedio apicali incurvo deinde valde recurvo quinquangulari acutiusculo marginibus convexo-incrassatis canaliculato ecostato, inexplanatum c. 0.75 cm. longum, fere 0.4 cm. latum. Gynostemium tenue, c. 0.25 cm. longum, auriculis elongatis, antheram bene superantibus, filiformi-subulatis, leviter sigmoideis. Anthera cucullata, oblonga, basi breviter obtuse trilobula, lobulo intermedio e connectivo convexo-incrassato, apice abrupte recurva truncata papillosa, c. 0,075 cm. longa. Pes gynostemii cum ovario angulum obtusum faciens, apice libero obtusangule incurvulus, crassus, c. 0.15 cm. longus. Ovarium oblique obconicum, 6-sulcatum, c. 0.23 cm. longum; pedicellus teres, bene 0.4 cm. longus, c. 0.1 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, northern slope, 1420 m., epiphytical. (H. J. LAM n. 1471, 3 October 1920; "pseudobulbs light green suffused with red

at the apex, leaves dark green above lighter beneath, peduncle reddish violet with light brown bracts, sepals light purplish yellow, dotted dark purple, base lighter, petals purple and pale yellow, lip outside greyish lilac, inside dotted purple, column and centre of flower indistinctly lilac-yellow, ovary dark reddish violet").

Distinguished from *P. guttulatum* Schltr. by smaller leaves, a longer peduncle, a smaller lip with rather acute side-lobes, and a comparatively longer column, from *P. dischorense* Schltr. by shorter leaves, a clawed dorsal sepal, rather long clawed and conspicuously keeled petals and rather acute side lobes, and from *P. brachypus* Schltr. by the small pseudobulbs and leaves, clawed dorsal sepal and longer clawed petals.

Description from a small specimen with one flower preserved in alcohol.

Pedilochilus obovatum J. J. S. n. sp.

Tab. LXX, 88.

Pusillum, caespitificum. Rhizoma breve, ramosum. Pseudobulbi dense aggregati, subglobosi ad ovales, longitudinaliter sulcati, 1-folii, c. 0.6—0.95 cm. longi, 0.6—0.4 cm. diam. Folium oblongum vel lanceolatum ad plus minusve ovatum, acutum, basi breviter petiolato-contractum, supra longitudinaliter canaliculatum cum lateribus convexis, carnosum, c. 1.1—2 cm. longum, 0.65—0.725 cm. latum. Inflorescentiae e rhizomate, 1-florae, pedunculo tenui, c. 4 cm. longo, vaginulis c. 3 tubulosis carinatis donato. Bractea tubuloso-infundibuliformis, apice oblique truncata, brevissime apiculata, carinata, c. 0.43 cm. longa. Flos mediocris, c. 1.75 cm. latus. Sepalum dorsale porrectum, $^1/_3$ superiore recurvulum, oblongo-ellipticum, vix acuminatum, acutum, basi breviter contractum, concavum, utrinque breviter puberulum, ciliolatum, nervis 3 dorso valde prominentibus, bene 1.1 cm. longum, bene 0.5 cm. latum. Sepala lateralia divergentia, oblique elliptica, apice conduplicata, explanata obtusa carinato-apiculata, basi unilateraliter leviter contracta, valde concava, margine antico abrupte inflexa et in flexu dorso carinata, margine postico involuta, intus papillosa, dorso lateribus posticis puberula ceterum minute papillosa, marginibus ciliolata, nervis 5 dorso prominentibus, c. 1.3 cm. longa, 0.7 cm. lata. Petala porrecta, horizontalia, gynostemium obtegentia, apice recurva, medio concavo-excavato, valde obliqua, ex ungue breviusculo abrupte in laminam inaequilateram semideltoideam marginibus leviter rotundatam apice breviter triangulo-acuminatam acutam basi truncatam angulo basilari rotundatam dilatata, glabra, dorso carinata, 1-nervia, tota c. 0.57 cm. longa, 0.36 cm. lata, ungue 0.1 cm. longo. Labellum immobile, porrectum, ex ungue brevi crasse carnoso callo oblique reverso a dorso compresso rotundato donato in laminam conspicuam valde concavam obovatam trilobulam marginibus incurvulam incrassatamque dilatatum, 5-nervium, nervis exterioribus fere marginalibus, lobulis lateralibus basilaribus erectis, falcato-recurvis, oblique oblongis, obtusis, margine antico breviter in saccum decurrentibus, c. 0.17 cm. longis, lobulo intermedio apicali carnoso, reflexo, quinquangulari, obtuso, marginibus convexo-incrassato, costa longitudinali convexa instructo, c. 0.2 cm. longo, 0.16 cm. lato, totum c. 0.975 cm. longum, 0.5 cm. latum. Gynostemium tenue, sectione transversa triangulum, c. 0.27 cm. longum, clinandrio excavato triangulo, auriculis elongatis, antheram longe superantibus, filiformi-subulatis, leviter sigmoideis. Anthera cucullata, ambitu oblonga, parte inferiore quadrangula basi bilobula cum connectivo valde incrassato lateraliter compresso basi in lobulum parvum reversum producto, apice in appendicem selliformem obtusangule recurvulam obtusam papillosam carnosulam aequilatam

producta, c. 0.08 cm. longa. Pollinia oblonga, extus convexa. Pes gynostemii cum ovario angulum subrectum faciens, apice a sepalis lateralibus libero obtusangule incurvus, crassus, oblongus, c. 0.18 cm. longus. Ovarium oblique obconicum, 6-sulcatum, c. 0.35 cm. longum; pedicellus c. 1.1 cm. longus, c. 0.4 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3250 m., weak slope between ferns, terrestrial. (H. J. LAM n. 1688, 21 October 1920; "pseudobulbs light yellow, leaf bright green, somewhat lighter beneath, bract yellowish violet, dorsal sepal violet inside and lateral sepals both sides pale yellow densely dotted with violet, petals shining dark violet outside, inside and lip coloured like the lateral sepals, column pale green with a violet top and borders, ovary dark violet, lighter at base, pedicel dark violet"). Foot of Doorman-top, 3200 m., open slope, terrestrial between stones. (H. J. LAM n. 1772, 27 October 1920; "pseudobulbs light green or yellowish green, leaf dead green, sepals and column densely dotted violet on a pale yellow ground, dorsal sepal less dotted, petals dark violet, lip with a yellow tip, peduncle and ovary violet").

Amongst the species with nearly sessile leaves, a rather long peduncle and medium sized flowers this is characterized by an obovate lip with a broad terminal lobe and the unilateral petals truncate at the base above the claw.

Description from materials preserved in alcohol.

Pedilochilus terrestre J. J. S. n. sp.

Tab. LXX, 89.

Rhizoma repens, ramosum, radicans, initio vaginis magnis imbricantibus obtusis nitidis latis c. 1—1.4 cm. longis tectum. Pseudobulbi basi c. 0.6—2 cm. distantes, basi rhizomati adnati, curvato-adscendentes, sicco c. 0.9—1.6 cm. longi, 1-folii. Folium oblongo- ad lanceolato-ellipticum, apice conduplicatum obtusum, basi petiolato-contractum conduplicatumque, costa media sicco dorso prominente, carnoso-coriaceum, sicco rigidum, c. 1.7—2.5 cm. longum, sicco 0.6—0.5 cm. latum. Inflorescentiae e rhizomate, adscendentes, 1-florae, pedunculo elongato, validiusculo, tereti, c. 12—20 cm. longo, 0.08 cm. diam., vaginulis 2 remotis tubulosis obtusis suprema subapiculata basi nonnullis approximatis donato. Bractea tubulosa, carinata, lateraliter compresso-apiculata, c. 0.55 cm. longa. Flos mediocris, carnosulus, c. 1.5 cm. longus, sepalis subparallelis. Sepalum dorsale oblongo-ellipticum, marginibus apice incurvis obtuse apiculatum, leviter concavum, ciliolatum, 5-nervium, c. 1.35 cm. longum, 0.6 cm. latum. Sepala lateralia ad pedem gynostemii decurrentia, oblique oblonga, apice angustata vix contracta anguste obtusa, concava, margine postico anguste incurva basi tantum cellulose marginata, margine antico incrassatula inflexa papilloso-ciliolata, 7-nervia, c. 1.5 cm. longa, 0.8 cm. lata. Petala parva, porrecta, valde obliqua, breviter unguiculata, valde inaequilatera, medio prope marginem posticum conspicue concavo-excavatum, margine antico valde obtusangule dilatata, apice recurva deinde incurvula, 1-nervia, dorso valde carinata, explanata ex ungue brevi oblique rhombea, acuminata, acuta, tota 0.77 cm. longa, ungue 0.15 cm. longo, 0.47 cm. lata. Labellum pedi gynostemii insertum, immobile, porrectum, cymbiforme, gynostemio parallelum porrectum, supra visum oblongo-ovale, 3-lobulum, basi breviter carnoso-unguiculatum, lobis lateralibus ad apicem unguis, carnosis, lateraliter compressis, erectis, oblique oblongis, falcato-recurvis, obtusis, c. 0.24 cm. longis, marginibus anticis in nervos juxta costam mediam decurrentibus, marginibus posticis in ungue pone lobos laterales callum carnosum reversum transversum humilem apicem versus

attenuatum apice rotundatum formantibus, marginibus sacci incrassatis, lobo intermedio apicali recurvulo, supra viso ambitu suborbiculari, convexo cum sulcis 2 longitudinalibus, basi canaliculato, subtus marginibus crassis exceptis concavo, c. 0.2 cm. lato, subtus convexum cum canalicula alta superne dilatata, costa angulato-convexa in canalicula, 5-nervium, nervis exterioribus prope marginem approximatisque, totum c. 1.25 cm. longum, fere 0.5 cm. latum. Gynostemium c. 0.37 cm. longum, clinandrio excavato valde obliquo semilunato, auriculis elongatis, antheram bene superantibus, e basi dilatata filiformi-subulatis, leviter sigmoideis. Anthera cucullata, oblongo-quadrangula, apice recurvulo truncata cellulosaque, connectivo oblongo-incrassato, c. 0.125 cm. longa. Stigma longitudinale, oblongum. Pes gynostemii cum ovario angulum obtusum faciens, incurvulus, apice a sepalis lateralibus libero incurvulo crassissimo sectione transversa semiorbiculari ante basin labelli costula transversa instructo, c. 0.2 cm. longus. Ovarium oblique obconicum, 6-sulcatum, c. 0.5 cm. longum; pedicellus teres, c. 1.1 cm. longus, 0.26 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3200 m., on a somewhat wet spot, terrestrial. (H. J. LAM n. 1684, 21 October 1920; "pseudobulbs yellow or yellowish green, sepals yellow streaked and dotted with violet, sometimes wholly violet, petals yellow with violet base or wholly reddish yellow, lip yellow dotted violet with a bright yellow border, column yellow, ovary dark violet, pedicel brownish yellow sometimes a little red, fruit idem but darker").

Near *P. longipes* Schltr. but with a creeping rhizome, remote pseudobulbs, narrower leaves, ciliolate sepals, oblong sidelobes of lip and an orbicular midlobe; moreover the flowers are differently coloured.

Description from herbarium and materials preserved in alcohol.

Bulbophyllum Thou.

Sect. Coelochilus.

Bulbophyllum holochilum J. J. S. in Fedde Rep. XI (1912), 139; in N. Guinea XII (1916), 361, t. CXXXI, 242.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 889, 22 September 1914). Plain north of Van Rees-mountains. (W. FEUILLETAU DE BRUYN n. 239, 10 December 1914).

Bulbophyllum quadricaudatum J. J. S. in Bull. Dép. Agric. Ind. néerl. XLV (1911), 10; in Nova Guinea VIII (1911), 591, t. CIV A; XII (1916), 364; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 182, 4 November 1914; also liv. pl. cult. in Hort. Bog.).

Bulbophyllum aristilabre J. J. S. in Fedde Rep. XI (1912), 278; in N. Guinea XII (1916), 364, t. CXXXII, 244.

Dutch New-Guinea: In the northern part, near Doorman-river, 200 m., forest on bank, epiphytical. (H. J. LAM n. 1361, 24 September 1920; "pseudobulbs light green, leaf light green above, pale green beneath, peduncle pale yellow suffused red beneath the nodes, bract light brown, sepals white outside faintly tinted violet, white and bright violet inside, lip yellow with a violet base and white top, inside white and bright violet, column white, ovary pale green").

Bulbophyllum concolor J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 66; in N. Guinea XII (1916), 366, t. CXXXIII, 246.

Dutch New-Guinea: In the northern part, west of Doorman-river, bank of brook, 350 m., epiphytical. (H. J. LAM n. 1299, 23 September 1920; "pseudobulbs light green, smooth, somewhat transparent, sepals dull purple with a few longitudinal darker streaks shining at their base, petals shining dark purple, lip white and yellowish white purple at the base, column yellowish green at the base, nearly colourless at the top, ovary light purple").

Sect. Polyblepharon.

Bulbophyllum heliophilum J. J. S. n. sp.

Tab. LXXI, 90.

Planta parva. Rhizoma abbreviatum, repens, radicans. Pseudobulbi parvi, approximati, ovoidei vel ovales, sicco c. 0.2—0.25 cm. longi. Folium ellipticum ad lanceolatum, acutum, crassius conico-apiculatum, sicco pungens, basi breviter petiolato-contractum conduplicatumque, nervis sicco subtus prominentibus, sicco crasse coriaceum, rigidum, c. 1.7—2.9 cm. longum, 0.73—0.63 cm. latum. Inflorescentiae e nodis rhizomatis, fasciculatae, erectae, 1-florae, folia longe superantes, pedunculo filiformi, c. 7.3 cm. longo, vaginula tubulosa donato. Bractea tubulosa, c. 0.25 cm. longa. Flos majusculus, angustus, c. 5 cm. longus. Sepalum dorsale erectum, oblongo-ovatum, longe subulato-caudatum, acutissimum, convexum, 7-nervium, nervis exterioribus brevissimis, totum c. 2.8 cm. longum, 0.6 cm. latum, acumine 1.2 cm. longo. Sepala lateralia deflexa, marginibus proximis in unum oblongo-ovatum caudato-acuminatum c. 0.67 cm. latum conglutinata, oblique oblongo-semiovata, subulato-acuminata, 5-nervia, tota c. 3 cm. longa, acumine 1.5 cm. longo. Petala multo minora, porrecta, parallela, gynostemium includentia, oblique suborbiculari-ovata, basi brevissime contracta, longe subulato-acuminata, concava, utrinque patentissime pubescentia, 3-nervia, tota c. 0.5 cm. longa, 0.225 cm. lata, acumine 0.22 cm. longo. Labellum mobile, lamella angusta pedi gynostemii insertum, elongatum, e basi incrassata recurva postice auriculis 2 satis longis reversis verticalibus sigmoideis rotundatis c. 0.03 cm. longis ornata supra costis 2 longitudinalibus brevibus altis crassis rotundatis antice breviter decurrentibus donata c. 0.1 cm. longa in caudam rectam anguste linearem apicem versus sensim angustatam tota longitudine longissime patentissime ciliatam c. 1 cm. longam cum ciliis 0.37 cm. latam productum. Gynostemium brevissimum, usque ad apicem auricularum c. 0.18 cm. longum, basi antice in pedem abbreviatum obtuse gibbiformem auctum, clinandrio valde obliquo, excavato, auriculis bidentatis, dente postico brevi acute triangulo, dente antico elongato filiformi leviter incurvulo antheram superante. Anthera minuta, cucullata, connectivo gibboso-incrassato a latere compresso, absque connectivo c. 0.04 cm. longa. Stigma parvum, alte excavatum. Ovarium sessile, 6-sulcatum, omnino bractea inclusum, c. 0.2 cm. longum.

Schouten Islands: Biak, northern coast, Wari, c. 200 m. (W. FEUILLETAU DE BRUYN, n. 394, 8 September 1915; "grows in the full sun, fl. brownish black").

This species has the largest flowers of the section. It resembles *B. blepharoglossum* Schltr. but in the form of the petals it is more like *B. arachnoideum* Schltr.

Description from a dried specimen.

Bulbophyllum quadrisubulatum J. J. S. n. sp.

Tab. LXXI, 91.

Rhizoma abbreviatum. Pseudobulbi dense aggregati, pressione plus minusve compressi, parvi, subglobosi, c. 0.35 cm. longi et diam., 1-folii. Folium ellipticum ad lanceolatum, vix acuminatum, acutum, basi brevissime contractum, supra in utraque parte canaliculae longitudinalis leviter convexum, subtus obtusangule convexum, crasse carnosum, c. 2.4—3.3 cm. longum, 1—0.85 cm. latum. Inflorescentiae fasciculatae, erectae, uniflorae, pedunculo tenui, c. 9.75 cm. longo. Bractea oblique tubulosa, acuta, ovario brevior, c. 0.275 cm. longa. Flos mediocris, reversus. Sepalum dorsale ovato-lanceolatum, apicem versus sensim angustatum, acutum, basi leviter concavum, ceterum leviter convexum, 5-nervium, c. 1.35 cm. longum, 0.35 cm. latum. Sepala lateralia in unum subovato-triangulo-lanceolatum anguste obtusum c. 1.43 cm. longum fere 0.4 cm. latum conglutinata, oblique lanceolato-lineari-triangula, 3-nervia. Petala porrecta, ambitu late rhombea, ex ungue brevi in laminam late triangulam basi breviter cuneatam angulis obtusam acute acuminatam dilatata, basi excepta utrinque puberula, ciliolata, concava, 1-nervia, tota fere 0.4 cm. longa, fere 0.3 cm. lata, ungue 0.075 cm. longo. Labellum membrana angusta pedi gynostemii insertum, mobile, rectum, anguste rhombeo-lanceolatum, apicem versus sensim angustatum, acutum, basi auriculis 2 reversis minutis falcato-incurvis triangulis obtusis instructum, supra basin utrinque in lobulum brevissimum rotundatum leviter incurvulum supra convexum dilatatum, margine praesertim versus basin anguste incurvulum, basi excepta longe denseque patentissime ciliatum, ciliis in parte inferiore brevibus, 3-nervium, costa longitudinali basi in callum conspicuum longitudinalem oblongum inferne sulco longitudinali duplicatum postice utrinque in denticulum reversum productum incrassata, c. 0.8 cm. longum, medio 0.14 cm., cum ciliis 0.3 cm. latum. Gynostemium verticaliter bipartitum, utroque latere bisubulatum, subulis posticis brevioribus rectis, subulis anticis multo longioribus porrectis falcatulo-incurvulis filiformibus, c. 0.2 cm. longum. Anthera inter subula postica inserta, cucullata, apice breviter lateque membranaceo-producta, obtusissima, basi dilatata, connectivo oblique subgloboso-gibboso leviter lateraliter compresso basi constricto papilloso, c. 0.05 cm. lata. Stigma parvum. Pes gynostemii abbreviatus, calliformis, c. 0.05 cm. longus. Ovarium recurvum, 6-sulcatum, cum pedicello c. 0.325 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 882, 22 September 1914; "flowers dark red, lip black").

Much resembling *B. polyblepharon* Schltr. but the leaves are fleshy, the peduncle much longer than the leaf, the bract shorter than the ovary, and the petals larger and clawed. Very remarkable is the deeply bipartite column with 4 awls.

Description from materials preserved in alcohol.

Bulbophyllum quadrifalciculatum J. J. S. n. sp.

Tab. LXXI, 92.

Pusillum, caespitificum. Rhizoma repens, ramosum, vaginis conspicuis latis carinatis apiculatis sicco pallidis tectum, radicibus elongatis. Pseudobulbi seriati, approximati, cum rhizomate angulos acutos facientes, sicco oblongo-subovoidei, ad c. 0.3 cm. longi, 1-folii. Folium lineare, obtusum, minute apiculatum, basi semsim angustatum, apice papilloso-serrulatum, nervis 5

sicco subtus prominentibus, c. 1—2.5 cm. longum, 0.1—0.2 cm. latum. Inflorescentiae numerosae, fasciculatae, 1-florae, pedunculis capillaribus, c. 3.2—3.5 cm. longis, medio vaginula tubulosa donatis. Bractea ovario brevior, tubulosa, breviter patenter apiculata, c. 0.075 cm. longa. Flos parvus, c. 0.7 cm. longus. Sepalum dorsale patentissimum, ovato-lanceolatum, apicem versus sensim angustatum, obtusum, minute apiculatum, leviter concavum, 3-nervium, c. 0.38 cm. longum, fere 0.125 cm. latum. Sepala lateralia marginibus proximis in laminam ovatam apice breviter bidentatam recurvulam basi concavam ceterum convexam cum sulco longitudinali c. 0.42 cm. longam fere 0.2 cm. latam conglutinata, semiovato-lanceolata, acuta, 3-nervia. Petala oblique oblongo-ovata, falcatula, sensim subulato-acuminata, acutissima, margine cellulosa, 1-nervia, c. 0.26 cm. longa, fere 0.1 cm. lata. Labellum membrana tenui quadrangula pedi gynostemii insertum, valde mobile, supra basin obtusangule recurvulum, 3-lobum, 3-nervium, basi auriculis 2 parvis reversis oblongis falcato-incurvis obtusis donatum, callo obliquo utrinque intus ad basin loborum lateralium, postice glandula elevata orbiculari truncata, explanatum totum c. 0.32 cm. longum, ad lobos laterales 0.08 cm. latum, lobis lateralibus in $^1/_5$ parte supra basin erectis, subtriangulo-dentiformibus, acutis, falcato-incurvis, lobo intermedio anguste oblongo, obtusiusculo, convexo, subtus concavo, longiuscule patentissime ciliato, supra costa conspicua longitudinali ultra apicem producta et in glandulam minutam terminante instructo, c. 0.075 cm. cum ciliis fere 0.15 cm. lato. Gynostemium brevissimum, cum ovario angulum obtusum faciens, dorso convexum, c. 0.075 cm. longum, clinandrio excavato, apice triangulo, incurvulo cum filamento subulato, auriculis porrectis, rectis, e basi triangula subulatis, antheram paulo superantibus. Anthera cucullata, apice in rostrum deflexum antice canaliculatum producta, clinandrio alte gibboso leviter lateraliter compresso minutissime verruculoso, bene 0.025 cm. lata. Stigma conspicuum, alte excavatum, basin gynostemii attingens, ovale. Pes gynostemii cum gynostemio ovarioque angulos obtusos faciens, crassus, subquadratus, truncatus, bene 0.05 cm. longus. Ovarium 6-sulcatum, furfuraceum, c. 0.1 cm. longum. Capsula flore marcido coronata, crassa, ovalis, rotundato-trigona, lateribus costa convexa sulcis limitata instructa, c. 0.45 cm. longa, 0.27 cm. diam.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, epiphytical in nearly flat swampy moss-grown forest, 1420 m. (H. J. LAM n. 1494, 4 October 1920; "pseudobulbs and leaf-stalk light green, leaf rather light green, peduncle light violet later greenish yellow, bract light greenish yellow, sepals dark violet, petals very dark violet pale yellow at base, lip nearly black with lilac ciliae, column pale yellow, fruit greenish yellow with a little violet").

Near *B. nigrilabium* Schltr. and *B. serrulatifolium* J. J. S. but with broader sepals and petals and a very different lip.

Description from herbarium and materials preserved in alcohol.

Bulbophyllum serrulatifolium J. J. S. n. sp.

Tab. LXXII, 93.

Pusillum. Rhizoma repens, brevissimum, radicans. Pseudobulbi approximati, cum rhizomate angulos acutos facientes, oblongo-ovoidei, obtusi, c. 0.35—0.4 cm. longi, 0.13—0.15 cm. diam., 1-folii. Folium lineare, saepe falcatum, obtusum, apiculatum, basi sensim angustatum conduplicatumque, medio obtusangule canaliculatum, superne planum, apice papilloso-subserrulatum, c. 3.1—4.5 cm. longum, 0.07—0.2 cm. latum. Inflorescentiae e basi pseudobulborum,

1-florae, pedúnculo filiformi, c. 1.35—1.6 cm. longo, basi nonnulis vaginulis tubulosis donato. Bractea infundibuliformis, oblique truncata, apiculata, c. 0.13 cm. longa. Flos parvus, leviter reversus, bene 0.6 cm. longus. Sepalum dorsale triangulo-lanceolatum, superne angustatum, acutum, lateraliter compresso-apiculatum, concavum, 3-nervium, c. 0.46 cm. longum, 0.12 cm. latum. Sepala lateralia mentum breve conicum obtusissimum saccatum formantia, in laminam oblongo-triangulam bidentatam supra basin valde recurvam conglutinata, oblique triangulo-lineari-lanceolata, acuta, concava, 3-nervia, c. 0.46 cm. longa, basi fere 0.1 cm. lata. Petala porrecta, parallela, gynostemio adpressa, oblique lanceolata, subfalcatula, setaceo-acuminata et superne utrinque 1 vel paucis denticulis angustis acutis interdum oppositis instructa, 1-nervia, c. 0.3 cm. longa, 0.06 cm. lata. Labellum valde mobile, membrana longiuscula lineari pedi gynostemii subtus infra apicem insertum, 3-lobum, angustum, supra basin obtusangule recurvulum, costa longitudinali e basi usque ultra apicem producta obtusaque, basi auriculis 2 minutis reversis falcatulo-divergentibus anguste oblongis obtusis leviter concavis instructum, 3-nervium, explanatum totum c. 0.38 cm. longum, ad lobos laterales fere 0.1 cm. latum, lobis lateralibus basilaribus erectis, oblique semiorbicularibus, margine antico vix productis, minute irregulariter marginatis, intus leviter convexis, extus leviter concavis, lobo intermedio recto, lanceolato, obtuso, marginibus inferne exceptis supra subtusque incrassato, longiuscule patentissime ciliato, fere 0.3 cm. longo, 0.075 cm. cum ciliis 0.125 cm. lato. Gynostemium breve, cum ovario angulum obtusum faciens, totum c. 0.125 cm. longum, clinandrio excavato suborbiculari, filamento e basi triangula filiformi-elongato, auriculis longe subulato-filiformibus, sigmoideis, antheram longe superantibus. Anthera cucullata, ambitu suborbicularis, basi rotundato-bilobula, papillosa, apice in rostrum transverse quadrangulum basi leviter contractum apice truncatum subretusumque producta, connectivo gibboso, c. 0.04 cm. lata. Pollinia in corpusculum subsemiglobosum unita. Stigma conspicuum, alte excavatum, longitudinale, ovale, in pedem gynostemii decurrens. Pes gynostemii cum ovario gynostemioque angulos obtusos faciens, brevis, latus, infra apicem dilatatum incurvulum constrictus, apice truncato leviter trilobulus, lobulo intermedio latiusculo aequilateraliter trapeziformi, lobulis exterioribus obtusis, c. 0.075 cm. longus, apice 0.06 cm. latus. Ovarium recurvulum, 6-sulcatum, fere omnino bractea inclusum, c. 0.1 cm. longum.

Dutch New-Guinea: In the northern part, near Doorman-river, 200 m., epiphytical in forest in bank. (H. J. LAM n. 1394, 24 September 1925; "leaves bright green, pseudobulbs a little darker, peduncle light green, sepals and petals light violet, darker at base, lip dark violet, column pale green with rosy tip, ovary light green").

Near *B. nigrilabium* Schltr. but with much narrower leaves and differences in nearly all the parts of the flower.

Description from herbarium and materials preserved in alcohol.

Bulbophyllum nigrilabium Schltr. Orch. D. N. Guinea (1913), 800.

Tab. LXXII, 94.

Dutch New-Guinea: In the northern part, near Doorman-river, 200 m., epiphytical in forest on bank. (H. J. LAM n. 1349, 24 September 1920; "leaf light green, peduncle light violet, sepals light violet darker at base, petals dark violet, lip with a white tip, column pale yellow").

Bulbophyllum torquatum J. J. S. n. sp.

Tab. LXXII, 95.

Pusillum. Rhizoma repens, ramosum, radicans. Pseudobulbi dense aggregati, parvi, ovales vel subovoidei, angulati, obtusi, antice late concavi, c. 0.3—0.425 cm. longi, 0.2—0.225 cm. diam., 1-folii. Folium lineari-lanceolatum, acutum vel obtusiusculum, basi sensim angustatum, supra canaliculatum cum lateribus convexis, tenuiter carnosulo-coriaceum, c. 1.4—1.9 cm. longum, 0.26—0.3 cm. latum. Inflorescentiae e nodis rhizomatis, fasciculatae, pedunculis filiformibus sparse furfuraceo-puncticulatis, apice oblique incrassatis, 1-floris, c. 0.6—0.75 cm. longis, basi vaginula donatis. Bractea oblique infundibuliformis, carinata, ovarium aequans. Flos parvus, c. 0.48 cm. longus, sepalis dorso minute atro-furfuraceo-puncticulatis. Sepalum dorsale ovarium continuum, dimidio inferiore concavum, superne convexum, oblongum, obtusum, basi leviter contractum, 3-nervium, c. 0.5 cm. longum, 0.2 cm. latum. Sepala lateralia mentum breve cum ovario angulum subrectum faciens rotundatum formantia, marginibus proximis apice excepto in laminam ovatam basi concava subsaccata apicem pedis gynostemii amplectentem ceterum convexam conglutinata, oblique lanceolata, vix acuminata, acuta, 3-nervia, fere 0.5 cm. longa, una 0.275 cm. lata. Petala porrecta, apice recurva, valde oblique subspathulato-lanceolata, sigmoidea, subulato-acuminata, parte mediana leviter erosula, concava, 1-nervia, bene 0.3 cm. longa, 0.12 cm. lata. Labellum mobile, lamella tenui satis longa insertum, medio obtusangule recurvum, unguiculatum, 3-lobum, 3-nervium, inexplanatum 0.24 cm. longum, dimidio inferiore incurvulo, explanatum cruciforme, c. 0.3 cm. longum, ad lobos laterales fere 0.2 cm. latum, ungue quadrangulo, basi utrinque in lobulum brevem reversum oblique triangulum obtusum producto, supra basin callo satis conspicuo erecto transverse oblongo ungue paulo angustiore antice declivi et in costulas 2 convexas inconspicuas exeunte postice leviter concavo cum costulis 2 minutis longitudinalibus apice truncato vix retuso instructo, subtus convexo, cum lamella basilari bene 0.1 cm. longo, 0.08 cm. lato, lobis lateralibus erectis, margine antico recurvo convexis, oblique triangulis, obtusis, margine antico pilis raris ciliatis, lobo intermedio porrecto, subovato-triangulo, obtuso, convexo, glabro, bene 0.125 cm. longo, bene 0.1 cm. lato. Gynostemium breve, infra clinandrium constrictum, c. 0.125 cm. longum, clinandrio excavato, filamento e basi triangula subulato-filiformi, auriculis anthera paulo brevioribus subulatis subfalcatulo-incurvulis. Anthera cucullata, basi biloba, apice in rostrum latum deflexum transverse quadrangulum truncatum antice concavum producta, connectivo alte lateraliter compresso-gibboso, c. 0.05 cm. lata. Pollinia 4, in corpusculum orbiculari-obovatum supra convexum subtus concavum unita, interiora quam exteriora minora, c. 0.04 cm. longa. Stigma conspicuum, alte excavatum, obverse triangulum. Pes gynostemii cum ovario angulum subrectum faciens, vix incurvulus, crassiusculus, oblongus, truncatus, c. 0.12 cm. longus. Ovarium oblique obconicum, 6-sulcatum, furfuraceum, c. 0.15 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., north-slope, epiphytical. (H. J. LAM n. 1473, 3 October 1920; "pseudobulbs light green, leaf green, lighter beneath, sepals and petals white transparent, lip and column white not transparent, ovary brownish green, stalk greenish yellow").

In the shape of the flowers especially of the lip this resembles *B. acutum* J. J. S. (sect. *Hybochilus*), and *B. birugatum* J. J. S. and *B. orohense* J. J. S. (sect. *Polyblepharon*).

The only difference between the sections *Hybochilus* and *Polyblepharon* is that the

parallel lateral sepals are free in the former whereas they are more or less cohering in the latter section. Not only from a scientific point of view but also in order to obtain a better survey in large genera e. g. *Bulbophyllum* I am of the opinion that it is preferable, as far as is possible, to avoid the planning of a large number of small sections, if these are separated only by subordinate characters.

Description from materials preserved in alcohol.

Bulbophyllum saccolabioides J. J. S. n. sp.

Tab. LXXII, 96.

Rhizoma frutescens, pars adest c. 5 cm. longa, vaginis magnis tubulosis imbricatis acute acuminatis carinatis c. 1 cm. longis tectum, radicibus adpressis. Pseudobulbi secundi, biseriales, rhizomati adpressi, teretes, facie rhizomati adpressa concavi, truncati, c. 0.4—0.6 cm. longi, 0.2—0.22 cm. diam., 1-folii. Folium recurvulum, anguste lanceolatum, acutum, basi angustatum conduplicatumque, obtusangule canaliculatum cum lateribus leviter convexis, subtus convexum, carnosum, supra subtusque minute impresse punctatum, c. 3—3.7 cm. longum, 0.6—0.8 cm. latum. Inflorescentiae numerosae, fasciculatae, 1-florae, pedunculis c. 0.35 cm. longis, vaginulis amplectentibus membranaceis omnino obtectis. Bractea e basi tubulosa oblique infundibuliformi-ampliata, acute aminata, carinata, membranacea, c. 0.36 cm. longa. Flos parvus, c. 0.375 cm. longus. Sepalum dorsale cum ovario angulum obtusum faciens, obtusangule incurvulum, subquinquangulari-ovatum, acutum, concavum, margine minutissime papillosum, nervis 3 dorso prominulis, c. 0.45 cm. longum, 0.24 cm. latum. Sepala lateralia porrecta, dimidio inferiore marginibus proximis arcte conglutinata, oblique ovato-ovalia, obtusa, breviter apiculata, marginibus proximis dimidio superiore anguste incurva, marginibus posticis minute papillosa, concava, 3-nervia, c. 0.45 cm. longa, 0.3 cm. lata. Petala parva, gynostemio adpressa, porrecta, ex ungue cuneato-oblonga transverse ovali-dilatata, acuminata, margine partis dilatatae crenulata papillosaque, 1-nervia, c. 0.225 cm. longa, 0.15 cm. lata. Labellum mobile, incurvulum, valde concavum, brevissime unguiculatum, 3-lobum, 3-nervium, nervis exterioribus ramosis, explanatum panduratum, c. 0.28 cm. longum, ad lobos laterales 0.18 cm. latum, ungue basi rotundato-exciso membrana brevissima tenui pedi gynostemii inserto, lobis lateralibus erectis oblique triangulis valde falcato-recurvis obtusis intus convexis carnosulis, lobo intermedio multo majore porrecto concavo-canaliculato-conduplicato eo labello 4-lobo, ex ungue brevi concavo transverse quadrangulo fere 0.05 cm. longo 0.1 cm. lato in laminam transverse ovali-oblongam utrinque rotundatam apice truncatam cum lobulo minuto obtuso apicali bene 0.15 cm. longam absque ciliis 0.26 cm. latam dilatato. Gynostemium breve, dorso convexum, c. 0.13 cm. longum, apice obtuse triangulo, clinandrio concavo, auriculis antheram non superantibus triangulis leviter subulato-acuminatis falcato-incurvis. Anthera cucullata, orbicularis, in rostrum angustius porrectum triangulum obtusum producta, connectivo satis humili ovali medio depresso, c. 0.05 cm. lata. Pollini 4, lateraliter compressa, exteriora elliptica, subobovata, extus convexa, fere 0.05 cm. longa, 2 interiora multo minora et tenuiora. Rostellum breve, rotundatum. Stigma parvum, subquadratum. Pes gynostemii cum gynostemio ovarioque angulos obtusos faciens, brevissimus, apice liber, truncatus, c. 0.06 cm. longus. Ovarium 6-sulcatum, c. 0.15 cm. longum; pedicellus teres, c. 0.25 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 3100 m., open crest with a

few trees, epiphytical. (H. J. LAM n. 1830, 30 October 1920; "roots light green, pseudobulbs light green, leaf bright green, sepals and petals pale yellow, lip with an orange stain at the base, light yellow above, column light lemon-yellow, ovary greenish yellow").

A very distinct species resembling in habit a *Saccolabium* or *Sarcochilus*.
Description from a specimen preserved in alcohol.

Sect. Ephippium.

Bulbophyllum masdevalliaceum Krzl. in Engl. Bot. Jahrb. XXXIV (1904), 251; Schltr. Orch. D. N. Guinea (1913), 777. — *B. Blumei* J. J. S. (pp. ?) in N. Guinea VIII (1911), 583.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 876, 14 September 1914; W. FEUILLETAU DE BRUYN n. 120, 29 September 1914). Near Pionier-bivouac, 10 m., epiphytical in forest. (H. J. LAM n. 688, 21 July 1920).

Bulbophyllum tectipetalum J. J. S. n. sp.

Tab. LXXIII, 97.

Rhizoma repens, teres, fere 0.2 cm. diam., ad basin pseudobulborum tantum radicans, internodiis elongatis, initio vaginis tubulosis carinatis apiculatis internodiis brevioribus tectum. Pseudobulbi c. 0.8—1.8 cm. distantes, erecti, cum rhizomate angulum acutum facientes, oblongi, quadranguli, lateribus obtusangule concavis, c. 1.7—1.85 cm. longi, 0.65—0.73 cm. diam., 1-folii. Folium lanceolatum, apice recurvulum, obtusum, basi angustatum conduplicatumque, supra in utraque parte costae mediae leviter canaliculatae leviter convexum, carnosulum, c. 3.7—6.7 cm. longum, 0.8—1.1 cm. latum. Inflorescentiae e nodis rhizomatis, 1-florae, pedunculo tenui, tereti, c. 3.7—4.3 cm. longo, inferne vaginulis c. 4 tubulosis carinatis apiculatis superne laxioribus accrescentibusque donato. Bractea tubulosa, truncata, subulato-apiculata, costa media dorso prominente, c. 0.3 cm. longa. Flos mediocris. Sepalum dorsale ellipticum, apice marginibus incurvis canaliculatum, brevissime conico-apiculato-acuminatum, intus margineque dense grossiuscule puberulum, basi 5-nervium, nervis exterioribus ramosis, fere 1 cm. longum, 0.54 cm. latum. Sepala lateralia oblique ovato-elliptica, apiculata, marginibus proximis anguste acute inflexa crispataque, intus grossius puberula, 5-nervia, c. 1—1.1 cm. longa, 0.475—0.5 cm. lata. Petala parva, porrecta, marginibus proximis contiguis obtusangule tectiformia, lata, valde obliqua, margine postico in lobulum conspicuum oblique rotundatum dilatata, apice unilateraliter oblongo-contracta, subacuta, minute papilloso-ciliolata, 1-nervia, nervo 1 parvo addito, c. 0.325 cm. longa, 0.2 cm. lata. Labellum mobile, porrectum, e basi incrassata in appendicem elongatam undatam linearem anguste obtusam cum parte basilari angulum obtusum facientem convexam subtus canaliculatam productum, parte incrassata supra basin subbilobulam pedi gynostemii inserta, valde recurva, basi auriculis 2 reversis verticalibus rotundatis canaliculata, antice convexa cum canalicula longitudinali, costulis 2 longitudinalibus antice productis divergentibusque in canalicula, totum c. 0.7 cm. longum, parte incrassata c. 0.2 cm. longa, 0.2 cm. lata, appendice 0.06 cm. lata. Gynostemium breve, rectum, dorso utrinque sulco longitudinali conspicuo instructum, c. 0.15 cm. longum, auriculis porrectis, antheram vix superantibus, acutis. Anthera cucullata, cordata, apice vix recurvula, obtusa, c. 0.06 cm. longa. Pollinia 4, lateraliter compressa, interiora quam exteriora minora. Stigma alte excavatum, obverse triangulum. Pes gynostemii breve, crassum, cum ovario angulum obtusum faciens, circiter dimidio superiore

obtusangule incurvus et a sepalis lateralibus liber, apice valde dilatatus et utrinque in lobulum incurvum obtusum productus, infra stigma callo antice excavato donatus, c. 0.15 cm. longus. Ovarium curvulum, teres, 6-sulcatum, c. 0.3 cm. longum; pedicellus tenuis, teres, c. 3.7 cm. longus, c. 0.275 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 858, 7 September 1914; "flowers yellow, lip black" (native collector)).

Near *B. undatilabre* J. J. S. but with very different petals and a much more elongate lip. Description from herbarium and materials preserved ln alcohol.

var. **longisepalum** J. J. S. n. var.

Differt a forma typica pseudobulbis 1.5—2.3 cm. distantibus c. 3.25—3.5 cm. longis 0.9—1 cm. diam., folio apiculato c. 10 cm. longo 1.5 cm. lato, pedunculo 8 cm. longo, flore majore, sepalis ovato-lanceolatis c. 2 et 2.2 cm. longis 0.5 et 0.6 cm. latis, petalis c. 0.375 cm. longis 0.2 cm. latis, labello 0.8 cm. longo appendice subrecto apicem versus paulo dilatato 0.12 cm. lato, gynostemii auriculis longius subulatis.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 869, 12 September 1914; "flowers red, lip yellow"). Same locality, Pionier-bivouac, 10 m., epiphytical. (H. J. LAM n. 610, 12 July 1920; "pseudobulbs yellowish green, sepals beautifully velvety red-brown shining outside, petals rather transparent with dark tips, lip yellowish brown, column light yellowish brown").

var. **maximum** J. J. S. n. var.

Differt a formis praecedentibus flore majore, sepalis lateralibus lanceolatis 4 cm. longis, 0.825 cm. latis, petalis c. 0.45 cm. longis 0.225 cm. latis, labello 1.17 cm. longo appendice fere 0.1 cm. lata, gynostemio ut in praecedente.

Dutch New- Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 118, 29 September 1914; "flowers red").

I have little doubt that the three forms described above belong to the same species, although they differ rather considerably in their dimensions.

In the plant collected by Dr. LAM n. 610 the appendix of the lip was not widened towards the apex.

Sect. Micromonanthe.

Bulbophyllum futile J. J. S. in Bull. Dép. Agric. Ind. néerl. XIX (1908), 6; in N. Guinea VIII (1909), 94, t. XXXI, 103.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 852, 7 September 1914). Near Doorman-river, 200 m., bank, epiphytical. (H. J. LAM n. 1307, 23 September 1920).

Bulbophyllum idenburgense J. J. S. n. sp.

Tab. LXXIII, 98.

Pusillum. Rhizoma repens, radicans, vaginis tubulosis membranaceis. Pseudobulbi c. 0.2—0.4 cm. dissiti, verisimiliter quadranguli, ovoidei vel magis elongati, sicco c. 0.65—0.8 cm. longi. Folium lanceolatum, obtusiusculum et breviter apiculatum vel subacutum, apice minu-

tissime serrulatum, basi breviter petiolato-contractum, costa media supra sulcata sicco subtus prominente, rigidum, tenuiter coriaceum, c. 2—2.6 cm. longum, sicco 0.45—0.525 cm. latum. Inflorescentiae e rhizomate, folia longe superantes, 1-florae, pedunculo tenui, c. 5.5 cm. longo, nonnullis vaginulis tubulosis ad basin. Bractea tubulosa, apice producta acuta carinata, c. 0.26 cm. longa. Flos in sectione mediocris. Sepalum dorsale oblongum, obtusiusculum, subulato-mucronatum, concavum, 3-nervium, c. 0.85 cm. longum, mucrone 0.075 cm. longo, fere 0.3 cm. latum. Sepala lateralia oblique oblonga, falcata, apice acutata cum apiculo obtuso, basi angustata, concava, 4-nervia, c. 1.25 cm. longa, 0.45 cm. lata. Petala parva, supra gynostemium porrecta, parallela, oblique oblonga, medio leviter constricta, apice brevissime anguste obtuse acuminata, margine antico basi obtusangule dilatata, irregulariter marginata, 1-nervia, c. 0.4 cm. longa, basi c. 0.175 cm., superne 0.13—0.15 cm. lata. Labellum minutum, mobile, membrana angusta pedi gynostemii subtus infra apicem affixum, suboblongum, supra basin recurvum, postice in lobulos 2 recurvos falcatos obtusos exeuns, marginibus basi erectis supra basin recurvis, parte antica convexum, supra longitudinaliter 2-costulatum, obtusum, c. 0.15 cm. longum. Gynostemium subgracile, rectum, infra clinandrium leviter constrictum, c. 0.18 cm. longum, clinandrio obliquo excavato, auriculis porrectis, parallelis, e basi brevi lata longe subulato-filiformi-productis, leviter falcatulis, antheram longe superantibus. Anthera cucullata, ovalis, apice in appendicem latam abrupte incurvam producta, connectivo convexo-incrassato costiformi, c. 0.06 cm. longa. Stigma longitudinale, oblongum. Pes gynostemii cum ovario angulum obtusum faciens, porrectus, basi satis lata sepalis lateralibus adnatus et infra stigma leviter incrassatus, parte antica a sepalis liber, incurvus, apice valde dilatatus truncatusque, inexplanatus c. 0.15 cm. longus, apice 0.06 cm. latus. Ovarium 6-sulcatum, c. 0.2 cm. longum; pedicellus tenuis, teres, c. 0.7 cm. longus, 0.18 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 400 m., epiphytical in forest. (W. Feuilletau de Bruyn n. 101, 10 September 1914).

I have placed this species, for the present, in the section *Micromonanthe*, although it has several characteristics in common with *Ephippium*. The lip is much like that of the section *Monilibulbum*.

Description from herbarium which was not in a very good state.

Bulbophyllum contortisepalum J. J. S. in Bull. Jard. Bot. Buit. 2e sér. III (1912), 23; in N. Guinea XII (1913), 80, t. XXI, 64.

Dutch New-Guinea: In the northern part, plain to the north of Van Rees-mountains. (W. Feuilletau de Bruyn n. 247, 10 December 1914).

Bulbophyllum ensiculiferum J. J. S. n. sp.

Tab. LXXIII, 99.

Rhizoma elongatum, repens, radicans. Pseudobulbi c. 0.6—0.9 cm. distantes, sicco elongato-petioliformes, c. 0.85—1 cm. longi, 1-folii. Folium oblongum, subobovatum, apice rotundatum, basi acuta sensim petiolato-angustatum, sicco coriaceum, totum c. 0.6—0.7 cm. longum, petiolo canaliculato c. 0.7 cm. longo, 1.35—2.2 cm. latum. Inflorescentia 1-flora, pedunculo filiformi. Bractea tubulosa, acuta, carinata, c. 0.425 cm. longa. Sepalum dorsale erectum, incurvum, lanceolatum, apicem versus angustatum, apice valde lateraliter compressum ensiforme obtusum,

concavum, nervis 3 praesertim dorso ad basin prominulis, c. 1.1 cm. longum, 0.25 cm. latum. Sepala lateralia oblique lanceolata, falcata, apice acuta et in setam satis longam producta, supra basin leviter constricta, 3-nervia, tota c. 1.65 cm. longa, 0.35 cm., basi 0.3 cm. lata, seta 0.5 cm. longa. Petala parva, porrecta, parallela, ovario adpressa, leviter convexa, apice incurvula, oblique lineari-lanceolata, acuta, subulato-apiculata, 3-nervia, c. 0.5 cm. longa, bene 0.1 cm. lata. Labellum parvum, mobile, carnosum, valde recurvum, supra visum anguste ovato-triangulum, apicem versus angustatum, acutiusculum, supra subplanum, superne marginibus recurvis convexum cum canalicula inconspicua longitudinali lata, subtus carinata, carina basin versus triangulo-dilatata canaliculataque, basi truncatum, lateribus concavum, glabrum, c. 0.225 cm. longum, 0.15 cm. latum. Gynostemium satis longum, rectum, paululo lateraliter compressum, c. 0.25 cm. longum, clinandrio excavato, apice producto bidentato sinibus rotundatis ab auriculis porrectis ambitu triangulis apice inaequaliter acute bidentatis separato, dente antico longiore. Anthera cucullata, valde lateraliter compressa, thecis ovalibus leviter convexis, connectivo valde carinato-conduplicato a latere viso triangulo apice truncato-conduplicato, lobulis lateralibus thecas superantibus, c. 0.1 cm. longa. Pollinia lateraliter compressa, a latere visa oblique oblongo-quadrangula, extus convexa, c. 0.05 cm. longa. Stigma parvum, longitudinale, oblongum. Pes gynostemii cum ovario angulum obtusum cum gynostemio angulum acutum faciens, apice libero obtusangule incurvulus, linearis, canaliculatus, c. 0.26 cm. longus. Ovarium 6-sulcatum, furfuraceo-punctatum, c. 0.3 cm. longum; pedicellus teres, parce furfuraceo-punctatus, c. 2.1 cm. longus, c. 0.425 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, Mamberamo, near Pionier-bivouac, 20 m., epiphytical in forest. (H. J. LAM n. 736, 31 July 1920; "dorsal sepal yellow, lateral sepals red with longitudinal lines, petals pale yellow, lip pale rosy, column red, pedicel and ovary rosy-white").

The nearest allies of this species are *B. harposepalum* Schltr. and *B. obovatifolium* J. J. S.; it has however much smaller differently coloured flowers, whereas also the separate floral parts show good characters.

SCHLECHTER placed his *B. harposepalum* in the section *Ephippium*. In my opinion this section will grow more natural if we exclude those species which lack the chief characters of the species which is looked at as its type, viz. *B. Blumei* J. J. S. (*Ephippium ciliatum* Bl.), although BLUME's genus *Ephippium* was heterogeneous.

For the present I place the species in question in SCHLECHTER's group *Micromonanthe*, which section is a kind of refuge for those species with one-flowered inflorescences which could not yet be classified in a satisfactory way.

The species was described from a dry specimen without flowers and one flower preserved in alcohol. Unfortunately the dry specimen consists of two densely confused species, thus rendering it somewhat uncertain, though rather probable, that the specimen described above really belongs with the flower preserved in alcohol.

Sect. Nematorhizus.

Bulbophyllum flavicolor J. J. S. n. sp.

Tab. LXXIII, 100.

Pusillum. Rhizoma repens, teres, ad basin pseudobulborum radicem singulam emittens, internodiis longis, vaginis brevibus tubulosis apiculatis. Pseudobulbi basi c. 0.4—0.7 cm. distantes,

depressi, rhizomati adnati, oblique ovales, c. 0.2—0.3 cm. longi, 1-folii. Folium latum, suborbiculari-ellipticum ad ellipticum, obtusum, apiculatum, basi breviter petiolato-contractum, leviter concavum, c. 0.425—0.575 cm. longum, 0.3—0.32 cm. latum. Inflorescentiae ad basin pseudobulborum solitariae, 1-florae, pedunculo filiformi, c. 0.8—0.9 cm. longo, basi nonnullis vaginulis tubulosis donato. Bractea tubulosa, apice ampliato recurva, sepalo dorsali adpressa, obtuse apiculata, c. 0.15 cm. longa. Flos parvus, c. 0.45 cm. longus, sepalis petalisque subparallelis. Sepalum dorsale lanceolatum, $^2/_3$ partibus superioribus angustatum, acutum, apicem versus leviter incrassatum, leviter concavum, 3-nervium, fere 0.5 cm. longum, 0.17 cm. latum. Sepala lateralia ad pedem gynostemii decurrentia, oblique lanceolato-triangula, acuta, apicem versus paululum incrassata, 3-nervia, c. 0.5 cm. longa, basi 0.14 cm. lata. Petala e basi elliptica concava longe acutissime subulato-acuminata, apice incrassatula, glabra, 1-nervia, tota c. 0.42 cm. longa, 0.12 cm. lata, apice 0.175 cm. longo. Labellum parvum, unguiculo minimo pedi gynostemii insertum, mobile, subsigmoideum, simplex, tenue, oblongum, obtusum, concavum, apice recurvulo convexum, basi breviter contracta canalicula brevi longitudinali instructum, subtus apice excepto convexum, superne papilloso-ciliolatum, 3-nervium, inexplanatum fere 0.2 cm. longum, 0.18 cm. latum. Gynostemium brevissimum, c. 0.06 cm. longum, clinandrio concavo, apice triangulo, filamento capillari, auriculis brevibus, horizontalibus, truncatis, vix retusis. Anthera parva, alte cucullata, postice producta, apice in rostrum quadrangulum truncatum canaliculatum producta, connectivo alto subgloboso minute celluloso-verruculoso, c. 0.04 cm. alta. Stigma faciem inferiorem gymnostemii fere omnino occupans, usque in basin pedis gynostemii decurrens, longitudinale, ovale. Pes gynostemii cum ovario angulum obtusum faciens, rectus, oblongus, apice haud dilatatus, rotundato-truncatus, c. 0.075 cm. longus. Ovarium 6-sulcatum, c. 0.07 cm. longum, omnino bractea inclusum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, northern slope, 1420 m., epiphytical. (H. J. LAM n. 1498, 4 October 1920; "pseudobulbs and leaf light green, flower bright yellow, lip a little darker, column a little lighter").

This plant is, I think, best placed in the section *Nematorhizus*. It is well characterized by the long subulate acuminate petals.

Description from herbarium and materials preserved in alcohol.

Sect. Papulipetalum.

Bulbophyllum Debruynii J. J. S. n. sp.

Tab. LXXIII, 101.

Rhizoma repens, radicans, teres, vaginatum. Pseudobulbi c. 0.25—0.3 cm. dissiti, cum rhizomate angulum acutum facientes, oblique ovoidei cum pluribus sulcis longitudinalibus, inter sulcos convexi, pallide virides, adulti purpurascenti-suffusi, nitidi, c. 0.85—0.9 cm. longi, 0.45—0.6 cm. diam., 1-folii. Folium oblongum, obtusum, vix apiculatum, basi brevissime contractum conduplicatumque, obtusangule canaliculatum, margine recurvum, coriaceum, opace viride, subtus pallidius, c. 1.6—2.8 cm. longum, 0.65—0.8 cm. latum. Inflorescentiae e basi pseudobulborum, 1-florae, pedunculo filiformi, quam pedicellum tenuiore, dilute sordide viridi, c. 0.45 cm. longo, inferne nonnullis vaginulis tubulosis donato. Bractea tubulosa, c. 0.15 cm. longa. Flos supra visus subovalis, c. 1.35 cm. longus, 0.95 cm. latus. Sepalum dorsale e basi patente incurvum

et sepalis lateralibus parallelum, lanceolatum, subulato-acuminatum, concavum, albido-ciliatum, semipellucidum, albidum, fascia mediana longitudinali ochracea, nervis 3 atropurpureis dorso prominentibus, c. 0.95 cm. longum, 0.3 cm., cum ciliis 0.425 cm. latum. Sepala lateralia multo majora, marginibus proximis apice excepto in unum ambitu subovale concavum conglutinata, oblique ovato-oblonga, obtusa, dorso ad apicem in apiculum brevem lateraliter compressum obtuse conicum producta, margine interiore ciliolata, nervis 4 dorso prominentibus, carnosula, intus nitida, dorso opaca, aurantiaco-flava, c. 1.4 cm. longa, 0.56 cm. lata. Petala parallela, porrecta, margine antico divergentia, apice recurvula, oblique oblonga, falcatula, obtusa, margine antico basi leviter dilatata, margine latiusculo et apice intus papillosa, semipellucide albida, stria longitudinali mediana duplicata violacea et utrinque stria maculata atroviolacea infra apicem late confluentibus ornata, bene 0.5 cm. longa, 0.2 cm. lata. Labellum parvum, mobile, breve, crassum, conspicue curvatum, supra longitudinaliter canaliculatum, canalicula costis altis papillosis limitata, marginibus valde reflexis infra apicem angulum obtusum formantibus, apice obtusum, basi utrinque in lobulum auriculiformem recurvum obtusum productum, subtus canaliculatum, canalicula basin versus dilatata, lateribus patentissime pubescens, pallide flavum, parte superiore margine apicali excepto nigrum, ceterum minute nigrescenti-punctatum, c. 0.2 cm. longum, bene 0.1 cm. latum. Gynostemium rectum, dilute flavo-viride, c. 0.24 cm. longum, apice obtuso, auriculis antheram bene superantibus, subulatis, subfalcatulis, albidis. Anthera alte cucullata, lateraliter compressa, apice incurva gibbosa et truncata, connectivo manifeste costato-incrassato, flavescenti-alba, c. 0.05 cm. longa. Pollinia oblonga, subfalcatula, semipellucide flava. Stigma longitudinale, oblongum. Pes gynostemii cum ovario angulum obtusum faciens, apice incurvus et abrupte dilatatus, flavescens, c. 0.14 cm. longus. Ovarium 6-sulcatum, dilute viride, striis 6 longitudinalibus pullis, c. 0.2 cm. longum; pedicellus pallidus, c. 0.75 cm. longus, c. 0.15 cm. supra basis articulatus.

Dutch New-Guinea: In the northern part, Mamberamo-river. (W. FEUILLETAU DE BRUYN, 1915, AJOEB, liv. pl. cult. in Hort. Bog. sub n. 70).

A small species of the section *Papulipetalum* with a short lip conspicuously carinate below. Description from a living specimen.

Bulbophyllum Melilotus J. J. S. n. sp.

Tab. LXXIV, 102.

Rhizoma repens. Pseudobulbi approximati, seriati, cum rhizomate angulum acutum facientes, erecti, ovoidei, apice contracti, virides, c. 1—1.1 cm. longi, basi 0.4—0.5 cm. diam., 1-folii. Folium erectum, petiolatum, lanceolatum, obtusum, apiculatum, basi sensim in petiolum angustatum, supra in utraque parte costae mediae supra sulcatae subtus leviter obtuse prominentis convexum, carnosum, supra nitidule viride, subtus pallidius pallide punctatum et opacum, c. 5.5—6 cm. longum, 1.3—1.7 cm. latum; petiolus canaliculatus, c. 1.2—1.7 cm. longus. Inflorescentiae fasciculatae, 1-florae, pedunculo brevi, tenui, purpureo, c. 0.75 cm. longo. Bractea tubulosa, apiculata, superne carinata, pallide purpurea, leviter punctata, c. 0.32 cm. longa. Flos parvulus, odore leviter ingrato. Sepalum dorsale cum ovario angulum obtusum faciens, medio obtusangule incurvum, oblongum, basi leviter contractum, apice leviter acuminatum, acutum, concavum, 3-nervium, ciliatum, superne intus longius papilloso-puberulum, praesertim superne carnosulum, flavescenti-album, nervis in $^1/_3$ parte inferiore purpureis, basi utrinque

intra marginem fascia longitudinali purpurea notatum, bene 0.8 cm. longum, 0.325 cm. latum. Sepala lateralia cum ovario angulum obtusum facientia, porrecta, parallela, horizontalia, marginibus proximis contigua sed non conglutinata, oblique oblonga, obtusa, breviter obtuse apiculata, intus basi excepta papillosa, carnosula, $^2/_5$ partibus inferioribus purpurea inter nervos albida, parte superiore flavescenti-albida purpurascenti-tincta, carnosula, c. 0.92 cm. longa, 0.37 cm. lata. Petala parva, porrecta, oblique oblonga, subfalcata, anguste obtusa, convexa, basi excepta papillosa, dimidio superiore atropurpurea, inferne dimidio antico purpurea, dimidio postico basi purpurea excepta albida, c. 0.175 cm. longa, 0.06 cm. lata. Labellum parvum, mobile, gynostemio brevius, 3-lobum, c. 0.125 cm. longum, hypochylio ambitu subcubico, postice truncato et obtusangule excavato, albido, purpureo-punctato, excavatione ochrascenti, lobis lateralibus erectis, brevibus, hypochylio aequilatis, late rotundatis, margine postico incurvis contiguisque, ochraceis, atropurpureo-notatis, lobo intermedio porrecto, valde lateraliter compresso, lateraliter viso subtriangulo margine superiore valde rotundato, in subulam porrectam acutam albidam purpureo-punctatam producto, supra basin versus inconspicue longitudinaliter sulcato, supra dilute purpureo, subtus albido, atropurpureo-punctato. Gynostemium longiusculum, curvulum, in utraque stigmatis parte leviter rotundato-dilatatum, pallide viride, subtus pallidius, praesertim basi et facie inferiore longitudinaliter purpureo-punctatum, c. 0.24 cm. longum, clinandrio concavo, auriculis porrectis, parallelis, tereti-subulatis, obtusis, antheram paulo superantibus. Anthera cucullata, apice triangulo-rostrata et obtusangule recurva, dilute viridis, c. 0.07 cm. longa. Pollinia valde lateraliter compressa, obovata, basi acuta, semipellucide flava. Stigma parvum, longitudinale. Pes gynostemii brevis, cum ovario angulum obtusum faciens, incurvus, apice truncatus et leviter excavatus, purpureo-punctatus, c. 0.07 cm. longus. Ovarium 6-sulcatum, purpurascens, c. 0.35 cm. longum; pedicellus in c. 0.3 cm. supra basin articulatus, pallide purpurascens, c. 3.5 longus.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac. (W. FEUILLETAU DE BRUYN, 1914, liv. pl. cult. in Hort. Bog. sub n. 25).

Apparently near *B. heterosepalum* Schltr., the description of which has been kept rather short by the author; however, the sketch, which I was kindly allowed to copy complements the description in many respects. The new species is distinguished by its much longer pedicelled differently coloured flowers, the dorsal sepal being puberulous in the upper part, the comparatively shorter inside papillose lateral sepals, a differently shaped lip and a comparatively longer column with shorter auricles.

When injured the plant exhales a scent of *Melilotus*.

Description from a living specimen.

Bulbophyllum calceilabium J. J. S. n. sp.

Tab. LXXIV, 103.

Rhizoma breve, repens, ramosum, radicans, vaginis conspicuis tectum. Pseudobulbi cum rhizomate angulum acutum facientes, verisimiliter teretes, sicco c. 2—2.5 cm. longi, 1-folii. Folium lanceolatum subfalcatulo-acuminatum, acutum, basi petiolato-angustatum canaliculatumque, costa media supra sulcata subtus prominente, sicco coriaceum, c. 12—17.5 cm. longum, 1.75—2 cm. latum. Inflorescentiae e rhizomate, 1-florae, pedunculo tenui, c. 3.5 cm. longo, basi pluribus vaginulis approximatis imbricantibus tubulosis donato. Bractea tubuloso-infundi-

buliformis, carinata, apiculata, c. 0.57 cm. longa. Flos mediocris, c. 1.4 cm. longus, sepalis parallelis dorso sparse furfuraceo-punctatis. Sepalum dorsale horizontale, inferne marginibus sepalorum lateralium anguste obtectum, parte inferiore concavum, superne marginibus recurvis convexum, apice marginibus incurvulis, lanceolatum, dimidio superiore fere inconspicue contractum angustatumque, acute apiculatum, minutissime patenter papilloso-ciliolatum, 3-nervium, carnosulum, c. 1.325 cm. longum, fere 0.4 cm. latum. Sepala lateralia porrecta, parallela, verticalia, apice oblique incurvula, inferne concava, superne convexa, apice marginibus incurvis, oblique ovato-oblonga, apicem versus angustata, apice dorso carinata, conico-apiculata, marginibus minute papillosa, nervis 5 et 2 minoribus, carnosula, c. 1.47 cm. longa, supra basin 0.7 cm. lata. Petala porrecta, subhorizontalia, apice recurvula, convexa, anguste oblique lanceolata, acuta, basi excepta margine superne etiam intus papillosa, 1-nervia, c. 0.7 cm. longa, 0.16 cm. lata. Labellum membrana tenui insertum, mobile, subsigmoideum, carnosum, 3-lobum, fere calceiforme, ambitu anguste oblongum, subtus convexum, c. 0.68 cm. longum, 0.23 cm. latum, ungue satis conspicuo, quadrangulo, apicem versus paululum dilatato, basi subtruncato cum denticulo minuto reverso utrinque, supra convexo-pulvinato-incrassato cum costulis 2 humilibus longitudinalibus approximatis basi divergentibus, subtus longitudinaliter sulcato, incrassatione basin labelli haud plane attingente, lobis lateralibus satis conspicuis, erectis, reversis, oblique triangulis, anguste obtusis, margine postico praesertim basi recurvulis, margine antico in lobum intermedium decurrentibus, in $^1/_3$ infra apicem labelli confluentibus et cavitatem triangulam formantibus, carnosulis, lobo intermedio porrecto, carnoso, subconico, leviter a dorso compresso, sectione transversa elliptico, apice magis compresso, leviter contracto, hamato-incurvo, acuto, supra prope apicem sulcis 2 inconspicuis longitudinalibus donato, subtus praesertim versus apicem papilloso. Gynostemium subgracile, rectum, sectione transversa trigonum, c. 0.46 cm. longum, clinandrio alte excavato, subtriangulo, margine postico exciso-bilobulo, lobulis truncatis subcrenulatisque, auriculis longis, porrectis, antheram aequantibus, linearibus, acutis, margine postico basi denticulo instructis. Anthera magna, cucullata, porrecta, ambitu cordata, basi bilobula, thecis membranaceis, connectivo gibboso-incrassato lateraliter compresso postice obtuse terminante, apice in appendicem conspicuam porrectam triangulam acutiusculam supra obtusangule convexam subtus leviter concavam papillosam producta, c. 0.225 cm. longa. Pollinia 4, lateraliter compressa, suborbiculari-obovata, 2 exteriora extus convexa, c. 0.06 cm. longa, 2 interiora minora et multo tenuiora. Pes gynostemii cum ovario gynostemioque angulos subrectos faciens, carnosus, oblongus, leviter concavus, apice brevissime libero incurvulus truncatus et vix dilatatus, c. 0.25 cm. longus. Ovarium 6-sulcatum, impresse puncticulatum, c. 0.4 longum; pedicellus tenuis, c. 2.2 cm. longus, 0.36 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, eastern slope, 1420 m., low moss-grown *Vaccinium*-forest, epiphytical. (H. J. LAM n. 1437, 1 October 1920; "pseudobulbs and leaf dark green, the latter shining above, dull beneath, leathery, sepals egg-yellow, the dorsal one dotted violet inside at the tip, the lateral ones with a yellowish white border and tip, petals yellowish white, lip light yellow, column light yellow lilac at base, ovary and pedicel greenish white or light green").

This interesting species tallies in some respects with the sections *Papulipetalum*, *Leptopus* and *Brachypus*. It is remarkable for its rather conspicuous side lobes of the lip.

B. chaunobulbum Schltr. and may be a few other species, placed by SCHLECHTER in

the section *Leptopus*, belong, according to his description, in my opinion more naturally to *Ephippium*.

Description from herbarium and 3 flowers preserved in alcohol.

Sect. Fruticicola.

Bulbophyllum Lamii J. J. S. n. sp.

Tab. LXXIV, 104.

Rhizoma ramosum, radicibus adpressis, initio vaginis magnis apiculatis prominenter nervosis ad 1.2 cm. longis tectum, partes adsunt c. 8—10 cm. longae. Pseudobulbi basi 0.6—09 cm. distantes, inferne rhizomati adnati, apice recurvuli, oblique quadranguli, antice posticeque alte canaliculati, c. 0.8—1 cm. longi, 0.2—0.3 cm. diam. Folium lanceolatum, acutum, interdum obtusum, saepe apiculatum, basi sulcato-subpetiolato-contractum, supra in utraque parte costae mediae supra sulcatae subtus obtuse prominentis convexum, subtus concavum, acute marginatum, apice minutissime crenulatum, carnoso-coriaceum, c. 4.2—6 cm. longum, 0.8—0.975 cm. latum. Inflorescentiae e nodis rhizomatis, fasciculatae, breves, pedunculis 1-floris, c. 0.3 cm. longis, basi nonnullis vaginulis tubulosis acuminatis membranaceis donatis. Bractea infundibuliformi-tubulosa, acuminata, apiculata, membranacea, c. 0.35 cm. longa. Flos parvulus, c. 0.75 cm. latus, sepalis divergentibus. Sepalum dorsale ovatum, longe canaliculato-subulato-acuminatum, concavum, 3-nervium, totum 0.7 cm. longum, 0.26 cm. latum, apiculo 0.15 cm. longo. Sepala lateralia oblique oblongo-triangula, margine postico rotundata, canaliculato-subulato-acuminata, convexa, margine antico anguste incurva, 3-nervia, tota c. 0.75 cm. longa, 0.25 cm. lata, apiculo 0.2 cm. longo. Petala parva, porrecta, parallela, verticalia, oblique suboblonga, obtusissima vel retusa, basi cuneata, leviter convexa, 1-nervia, c. 0.2 cm. longa, bene 0.1 cm. lata. Labellum membrana parva basi paulo dilatata 3-nerviaque insertum, mobile, vix recurvulum, carnosum, linguiforme, anguste oblongum, obtusum, basi canaliculatum cum lobis 2 erectis rotundatis, superne leviter convexum, subtus convexum cum canalicula longitudinali, utroque latere subtusque basi excepta longe patentissime pilosum, c. 0.3 cm. longum, 0.1 cm., cum pilis 0.15 cm. latum. Gynostemium breve, dorso convexum, c. 0.15 cm. longum, apice aequilateraliter trapeziformi truncato, filamento brevi filiformi, auriculis antheram longe superantibus, subulato-filiformibus, falcatulis, margine postico basi dente instructis. Anthera cucullata, late subtriangula, connectivo valde incrassato convexo basi minute bilobulo antice producto vix recurvulo crasse selliformi-conduplicato apice oblique truncato, c. 0.05 cm. longa. Pollinia 4, a latere compressa, oblique subobovato-triangula, margine inferiore recta, c. 0.03 cm. longa, interiora quam exteriora multo minora et tenuiora. Stigma longitudinale, oblongo-obovatum. Pes gynostemii cum ovario angulum rectum faciens, subrectus, oblongus, apice paulo dilatatus et leviter obtuse trilobulus, canaliculatus, crassiusculus, bene 0.1 cm. longus. Ovarium breve, teres, 6-sulcatum, c. 0.08 cm. longum; pedicellus aequicrassus, teres, c. 0.425 cm. longus, 0.2 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, near Pionier-bivouac, 10 m., epiphytical in forest. (H. J. LAM n. 692, 21 July 1920; "sepals and petals hyaline light yellow, lip yellowish white, column yellow").

Much in the way of *B. sawiense* J. J. S. but with differently coloured flowers, longer

subulate acuminate sepals, differently shaped petals, the arms of the column provided with a tooth and the column foot not incurved.

Description from a specimen with one flower preserved in alcohol.

Sect. Epibulbon.

Bulbophyllum commissibulbum J. J. S. n. sp.

Tab. LXXV, 105.

Rhizoma breve, repens, radicibus tenuibus. Pseudobulbi dense aggregati, ovoidei ad ovales, obtusi, leviter longitudinaliter sulcati, antice valde concavi, c. 0.6—0.8 cm. longi, 0.4—0.475 cm. diam., 1-folii. Folium petiolatum, anguste lanceolatum, obtusum, apiculatum, basi acutum, supra canaliculatum cum lateribus convexis, rigide carnosum, totum c. 3.1—3.2 cm. longum, 0.47—0.5 cm. latum, petiolo 0.275—0.375 cm. longo. Inflorescentiae in rhizomate fasciculatae, 1-florae, pedunculo filiformi, c. 5.25—6.5 cm. longo, inferne nonnulis vaginulis tubulosis donato. Bractea tubulosa, apiculata, carinata, fere 0.3 cm. longa. Flos conspicuus, c. 4.5 cm. longus. Sepalum dorsale lineare, apicem versus sensim angustatum et in filum longissimum productum, concavum, nervis 3 dorso prominulis, c. 4.8 cm. longum, 0.3 cm. latum, filo 3 cm. longo. Sepala lateralia lineari-triangula, apicem versus sensim angustata et in filum longissimum exeuntia, falcatula, concava, nervis 3 dorso versus basin prominulis, tota c. 5.25 cm. longa, 0.4 cm. lata, filo c. 3.4 cm. longo. Petala parva, porrecta, oblique spathulata, ex ungue oblongo basi paululo dilatato in laminam breviter oblique rhombeam apice recurvulam obtusam dilatata, basi excepta ciliolata, 1-nervia, bene 0.3 cm. longa, ungue 0.1 cm. longo basi aequilato, lamina absque ciliis 0.15 cm. lata. Labellum mobile, supra basin erectam alte canaliculatam subtus convexam recurvum, porrectum, magnam partem marginibus valde recurvis convexum, canalicula basilari usque ad $^2/_5$ partes supra basin producta decrescenteque costis convexis basi divergentibus antice decrescentibus puberulis limitata, fere usque ad medium ciliolatum, nervis 3 superne 7 parallelis in nervos intramarginales excurrentibus, inexplanatum oblongo-ovatum, obtusum, c. 0.675 cm. longum, 0.33 cm. latum, explanatum subellipticum, obtusiusculum, c. 0.77 cm. longum, 0.375 cm. latum. Gynostemium parvum, conicum, apice angustum, basi crassa sensim in pedem exeuns, absque anthera c. 0.14 cm. longum, clinandrio parvo, utroque latere dentem triangulum tenuem acutum gerente. Anthera cucullata, ambitu suborbicularis, apice breviter producta et paululo contracta, obtusissima, connectivo alto 3-costuloque, c. 0.05 cm. lata. Pollinia 4, valde inaequalia, valde lateraliter compressa, suborbicularia, 2 interiora multo minora tenuioraque. Stigma minutum, obovatum. Pes gynostemii cum ovario angulum rectum faciens, c. $^1/_3$ parte superiore rectangule incurvus, crassus, oblongus, apice vix dilatatus truncatusque, concavus cum marginibus acutis, c. 0.24 cm. longus. Ovarium 6-sulcatum, c. 0.15 cm. longum; pedicellus curvatus, filiformis, c. 1.2 cm. longus, 0.3 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, ridge c. 70 km. to the north of Carstensz-mountains, bivouac C, 1800 m., between moss. (L. A. C. M. DOORMAN n. 35, July—August 1914; "streaked purple brown").

In the section *Epibulbon* this is well characterized by the very long filiform appendages of the sepals.

Description from a single specimen preserved in alcohol.

Sect. Rhizocaulon.

Bulbophyllum cochlioides J. J. S. n. sp.

Tab. LXXV, 106.

Rhizoma elongatum, dependens, c. 35 cm. longum, radicibus adpressis, vaginis magnis imbricatis tubulosis apicem versus fissis conduplicatisque acuminatis acutis prominenter nervosis c. 2 cm. longis omnino obtectum. Pseudobulbi ad c. 1.4 cm. distantes, rhizomati adnati, apice breviter liberi, sicco quadranguli, 1-folii. Folium ovatum, acute acuminatum, basi rotundata brevissime contractum, nervis c. 7 majoribus curvatis sicco subtus tenuiter prominulis, c. 4.7—6.7 cm. longum, 2.1—2.4 cm. latum. Inflorescentiae in nodis rhizomatis ramulorum rudimentarium brevium fasciculatae, 1-florae, breves, fasciculis multifloris (20 et plus), pedunculis tenuibus, 0.6—1.1 cm. longis, vaginulis tubulosis membranaceis sparse puncticulatis donatis. Bractea tubuloso-infundibuliformis, apice obliqua, fusco-flavo-puncticulata, c. 0.36 cm. longa. Flos c. 1.2 cm. latus. Sepalum dorsale cum ovario angulum obtusum faciens, apice recurvulum, lanceolatum, apicem versus sensim angustatum, acutum, concavum, 3-nervium, dorso ad basin flavo-fusco-puncticulatum, c. 0.625 cm. longum, 0.225 cm. latum. Sepala lateralia patentissima, oblique oblongo-triangula, acuta, apiculata, basi convexa, ceterum concava, 3-nervia, dorso praesertim ad basin flavo-fusco-puncticulata. Petala parva, porrecta, verticalia, gynostemio adpressa, oblonga, obtusa, celluloso-erosula, 1-nervia, c. 0.27 cm. longa, bene 0.1 cm. lata. Labellum unguiculo brevi utrinque exciso pedi gynostemii insertum, mobile, subrectum, linguiforme, lanceolatum, apice angustatum, obtusum, lobis 2 erectis latis subsemiorbicularibus rotundatis carnosis ad basin, parte antica convexum, costis 3 verrucosis longitudinalibus supra medium labelli evanescentibus, costa intermedia etiam basin versus evanescente, costis exterioribus inferne introrsum deflexis horizontalibus contiguis tubum facientibus, subtus convexum cum canalicula longitudinali apicem versus dilatata, subtus marginibus apiceque exceptis verruculoso-papillosum, 3-nervium, carnosum, c. 0.575 cm. longum, 0.16 cm. latum. Gynostemium supra basin leviter constrictum, dorso convexum, totum c. 0.16 cm. longum, apice triangulo obtuso, clinandrio excavato, auriculis elongatis, antheram longe superantibus, filiformi-subulatis, sigmoideis. Anthera alte cucullata, ovalis, apice breviter obtuse producta, marginibus apice excepto patentissimis, c. 0.06 cm. lata. Pollinia 4, lateraliter compressa, oblique obovata, subtus recta, c. 0.07 cm. longa, interiora quam exteriora multo minora tenuioraque. Stigma longitudinale, oblongum, margine inferiore leviter incrassatum. Pes gynostemii cum ovario angulum obtusum fere rectum faciens, apice a sepalis lateralibus liber incurvus et trilobulus, lobulis exterioribus porrectis rotundatis, lobulo intermedio deorsum spectante crasso obtuso labellum gerente, c. 0.17 cm. longus. Ovarium 6-sulcatum, c. 0.175 cm. longum, cum pedicello tereti c. 0.63 cm. longo in 0.33 cm. supra basin articulato flavo-fusco-puncticulatum.

Dutch New-Guinea: In the northern part, near Doorman-river, 200 m., steep bank, epiphytical, dependent. (H. J. Lam n. 1403, 25 September 1920; "leaves dull green, the midrib somewhat darker, sepals transparently light green with longitudinal rows of violet dots at the base, petals like the base of the calyx, lip greenish white with a few violet spots, lobes and apical part lilac, column and ovary light greenish yellow").

In its habit this species much resembles *B. salaccense* Rchb.f. (*Cochlia violacea* Bl.)

which, however, belongs to another section. It is very different from the species placed by Dr. SCHLECHTER in the section.

Description from herbarium and flowers preserved in alcohol.

Bulbophyllum levidense J. J. S. n. sp.

Tab. LXXV, 107.

Rhizoma dependens, tenue, flexuosum, c. 10 cm. longum, initio vaginis tubulosis acutis prominenter nervosis tectum, basi tantum radicans. Pseudobulbi bifarii, basi rhizomati adnati, parte libera erecto-patentes, subteretes, longitudinaliter sulcati, antice canaliculati, c. 0.6—0.9 cm. longi, parte libera 0.35—0.45 cm. longa, 0.1 cm. diam., 1-folii. Folium patentissimum, lineari-lanceolatum, acutum vel brevissime acuminatum, basi angustatum, supra in utraque parte canaliculae longitudinalis convexum, costa media subtus leviter convexo-prominula, utrinque sparse furfuraceo-puncticulatum, papyraceo- ad carnosulo-coriaceum, c. 1.45—2.7 cm. longum, 0.3—0.5 cm. latum. Inflorescentiae e nodis rhizomatis, fasciculatae, uniflorae, pedunculis tenuibus, c. 0.15 cm. longis, basi vaginula tubulosa donatis. Bractea oblique tubuloso-infundibuliformis, c. 0.14 cm. longa. Flos parvus, c. 0.35 cm. latus. Sepalum dorsale ovale, apice rotundatum, basi latum, valde concavum, 3-nervium, tenue, c. 0.25 cm. longum, 0.16 cm. latum. Sepala lateralia divergentia, oblique ovato-triangula, acuta, apiculata, 3-nervia, fere 0.3 cm. longa, 0.18 cm. lata. Petala porrecta, parallela, gynostemio adpressa, oblique oblonga, vix falcatula, obtusa, dense grossius ciliolata, 1-nervia, c. 0.175 cm. longa, cum ciliis 0.06 cm. lata. Labellum mobile, leviter curvatum, ex ungue brevi obverse aequilateraliter trapeziformi excavato oblongo-linguiforme, medio fere leviter constrictum, subtrilobulum, obtusum, lobulis lateralibus erectis, leviter rotundatis utrinque in lobum intermedium anguste decurrentibus, supra canalicula longitudinali in c. $^1/_4$ infra apicem terminante costis 2 sicco brunneo-marginatis limitata instructum, subtus convexum cum canalicula longitudinali et basi excepta longe patentissime pilosum, 3-nervium, carnosum, c. 0.225 cm. longum, absque pilis fere 0.1 cm. latum. Gynostemium supra basin paulo constrictum, dorso convexum, c. 0.15 cm. longum, apice aequilateraliter trapeziformi truncato cum apiculo minuto, clinandrio excavato, auriculis elongatis, parallelis, antheram longe superantibus, subulatis, sigmoideis. Anthera cucullata, basi bilobula, connectivo incrassato et in rostrum latum obverse subrhombeum obtusissimum convexum producto, c. 0.05 cm. lata. Pollinia 4, lateraliter compressa, oblique obovato-triangula, 0.04 cm. longa, 2 interiora quam exteriora multo minora tenuioraque. Stigma longitudinale, subobovatum. Pes gynostemii cum ovario angulum acutum fere rectum faciens, rectus, lineari-oblongus, apice utrinque leviter denticulato-dilatatus, fere 0.1 cm. longus. Ovarium oblique obconicum, 6-sulcatum, c. 0.06 cm. longum; pedicellus teres, c. 0.275 cm. longus, c. 0.05 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., north-slope, epiphytical. (H. J. LAM n. 1472, 3 October 1920; "leaf light green, sepals and petals yellowish white, dotted purple, lip violet with lighter hairs, column greenish yellow with the base light green, ovary and stalk light yellowish green").

With *B. hystricinum* Schltr. this species has in common the ciliate petals; for the rest it is, however, very different.

In the flower examined one of the column-arms was normal, the other much shorter

and bearing on the anterior margin a somewhat thicker tooth. Probably one has to do here with an initial stage of the development of a second anther.

Description from a plant preserved in alcohol.

Sect. Oxysepalum.

Bulbophyllum korimense J. J. S. n. sp.

Tab. LXXV, 108.

Rhizoma elongatum, ramosum, verisimiliter dependens apicibus adscendentibus, omnino vaginis tubulosis obtectum, radicibus rhizomati adpressis. Pseudobulbi c. 1.5—2 cm. dissiti, rhizomati adpressi, oblongi, facie rhizoma versus spectante concavi, macerati multicostati (revera?), c. 0.5 cm. longi, 0.22 cm. diam. Folium lanceolatum, obtusum, leviter retusum cum mucrone vix longiore conico in sinu, basi breviter contractum conduplicatumque, concavum, dorso convexum, crassissime carnosum, rigidum, maceratum c. 2.8—3 cm. longum, 0.775—0.8 cm. latum, 0.2—0.225 cm. crassum. Inflorescentiae e nodis rhizomatis, fasciculatae, 1-florae, pedunculo tenui, c. 0.25—0.35 cm. longo, omnino vaginulis basilaribus membranaceis c. 0.325—0.37 cm. longis incluso. Bractea conspicua, ovarium longe superans, e basi tubulosa triangula acuta lateraliter compresso-apiculata, valde concava, c. 0.25—0.27 cm. longa. Flos c. 0.6 cm. longus. Sepalum dorsale e basi oblongo-triangula longe lineari-filiformi-productum, 3-nervium, totum c. 0.7 cm. longum, parte dilatata 0.23 cm. longa, bene 0.1 cm. latum. Sepala lateralia e basi oblique triangula longe lineari-filiformi-producta, 3-nervia, c. 0.675 cm. longa, parte basilari vix 0.2 cm. longa, 0.1 cm. lata. Petala parva, linearia, apiculata, 1-nervia, c. 0.12 5cm. longa, vix 0.03 cm. lata. Labellum parvum, mobile, ungue lineari membranaceo affixum, supra basin valde recurvum, inferne marginibus erectis rotundatis canaliculatum, parte antica porrecta horizontali rotundata concava subtus convexa, 3-nervium, explanatum ambitu ovale, subtrilobum, cum ungue fere 0.15 cm. longum, ad lobos laterales 0.08 cm. latum, lobis lateralibus rotundatis, lobo intermedio orbiculari, c. 0.05 cm. longo, 0.06 cm. lato. Gynostemium brevissimum, absque anthera c. 0.07 cm. longum, clinandrio concavo, apice triangulo dorso convexo, auriculis triangulis aequilongis. Anthera cucullata, suborbicularis, truncata, connectivo leviter incrassato, fere 0.05 cm. lata. Pollinia orbicularia. Rostellum membraniforme. Stigma conspicuum, obverse triangulum, longe in pedem gynostemii decurrens, alte excavatum. Pes gynostemii cum ovario angulum obtusum faciens, vix incurvulus, apice paulo tenuior et vix recurvulus, bene 0.1 cm. longus. Ovarium 6-sulcatum, c. 0.12 cm. longum.

Schouten Islands: Biak, northern coast, Korim. (W. FEUILLETAU DE BRUYN n. 459, 13 October 1915; "in full sun, flowers yellow").

Very well characterized by the broad concave threelobed labellum rounded at the apex.

Description from herbarium.

Bulbophyllum riparium J. J. S. n. sp.

Tab. LXXV, 109.

Rhizoma elongatum, dependens, ramosum, geniculatum, teres, costatum, fuscescens, c. 60 cm. longum, 0.13 cm. diam., vaginis tubulosis prominenter nervosis fuscis furfuraceis omnino obtectum, radicibus adpressis. Pseudobulbi c. 2.5—5 cm. dissiti, parvi, rhizomati adpressi, subteretes, costato-angulati, subtus applanati, virides, c. 0.325—0.45 cm. longi, 0.125 cm.

diam., 1-folii. Folium petiolatum, oblongum, apice recurvum, rotundato-bilobulum, brevissime apiculatum, basi cuneatum, supra late canaliculatum cum sulco longitudinali, marginem versus convexum, subtus obtusangule convexum, rigide carnosum, nitidule viride, impresse punctatum, c. 2.75—4 cm. longum, 1.1—1.5 cm. latum; petiolus tenuis, supra sulcatus, c. 0.3—0.5 cm. longus. Inflorescentiae e nodis rhizomatis 1—3 fasciculatae, numerosae, brevissimae, 1-florae, pedunculo sub vaginis rhizomatis abscondito, albido, c. 0.15—0.25 cm. longo, nonnulis vaginulis teneribus acutis semipellucidis albidis donato. Bractea ovarium amplectens et superans, e basi tubulosa triangula, acuta, concava, semipellucida, albida, c. 0.13 cm. longa. Flos patentissimus, paulum apertus, c. 0.67 cm. longus vel paulo major, sepalis parallelis, flavescentibus, basi albidis. Sepalum dorsale e basi triangula concava c. 0.2 cm. longa 0.12 cm. lata longe subulato-contractum, totum c. 0.67 cm. longum. Sepala lateralia cum pede gynostemii mentum breve late conicum obtusum formantia, e basi oblique triangula concava c. 0.17 cm. longa 0.13 cm. lata longe subulato-producta, c. 0.7 cm. longa. Petala parva, porrecta, parallela, subovalia, obtusa, vix concava, albida, semipellucida, c. 0.125 cm. longa, 0.07 cm. lata. Labellum mobile, basi marginibus erectis canaliculato-concavum, ceterum marginibus recurvis convexum, citrinum, apice ochrascens, explanatum ovatum, apicem versus sensim angustatum, obtusum, c. 0.15 cm. longum, 0.075 cm. latum. Gynostemium breve, albidum, c. 0.06 cm. longum, filamento triangulo, auriculis paulo longioribus, oblique oblongo-triangulis, subfalcatulis, acutis. Anthera cucullata, suborbicularis. Stigma majusculum. Pes gynostemii cum ovario angulum obtusum faciens, oblongus, obtusus, intus apice flavescens, c. 0.06 cm. longus. Ovarium obconicum, 6-sulcatum, pallide virescens, c. 0.05—0.06 cm. longum.

Dutch New-Guinea: In the northern part, Noord-river. (Exp. LORENTZ 1907, DJIBDJA, liv. pl. cult. in Hort. Bog. sub n. 41).

This is, I think, nearest to *B. sparsifolium* Schltr., but the rhizomes are much longer, the pseudobulbs more distant, the leaves longer, the flowers larger, the column-arms not falcate and the column foot not incurved.

Description from living specimens.

Sect. Pelma.

Bulbophyllum linearipetalum J. J. S. n. sp.

Tab. LXXVI, 110.

Rhizoma frutescens, ramosum, patens vel dependens apicibus adscendentibus, praesertim basi radicans, parte inferiore adulta radicibus adpressis, omnino vaginis diu persistentibus magnis quaquaversis imbricantibus inferne tubulosis acutatis acuminatisve acutis sicco prominenter nervosis tectum, c. 23 cm. longum. Pseudobulbi c. 1—1.3 cm. dissiti, subteretes, facie antica rhizomati adpressa canaliculati, ad c. 1.9 cm. longi. Folium lanceolatum, acutum, basi cuneato-petiolato-contractum canaliculatumque, nervis majoribus c. 9 tenuioribus intermixtis, venis horizontalibus reticulatum, nervis venisque costa media supra sulcata excepta supra subtusque sicco promineniibus, c. 4.3—5 cm. longum, 0.95 cm. latum. Inflorescentiae e nodis rhizomatis, numerosae, breves, racemosae, brevissime pedunculatae, laxe c. 4—5-florae, nonnullis vaginulis bracteiformibus ad basin, rachide filiformi serpentina absque floribus c. 1.5—1.8 cm. longa, internodiis c. 0.2—0.25 cm. longis. Bracteae erecto-patentes, e basi tubulosa ovato-triangulae,

acutae, valde concavae, membranaceae, c. 0.4—0.44 cm. longae. Flores tenues, c. 0.75—0.8 cm. longi. Sepalum dorsale e basi oblonga lineari-caudatum, concavum, pilis brevissimis clavatis ciliolatum, 3-nervium, c. 0.775 cm. longum, fere 0.1 cm. latum. Sepala lateralia dorsali similia sed paulum obliqua, c. 0.8 cm. longa, 0.1 cm. lata. Petala minima, porrecta, oblique subulata, 1-nervia, glabra, c. 0.125 cm. longa, 0.025 cm. lata. Labellum minutum, mobile, rectum, oblongum, apicem versus angustatum, obtusum, marginibus supra basin recurvis valde convexum, basi tantum canaliculatum, basi excepta supra minutissime papillosum, c. 0.06 cm. longum. Gynostemium brevissimum, vix curvulum, dorso convexum, usque ad apicem rostelli c. 0.06 cm. longum, filamento incurvulo triangulo, auriculis paulo longioribus obtusangule incurvis dentiformibus, Anthera leviter cucullata, transverse ovalis, obtusissima, basi brevissime contracta, fere 0.025 cm. lata. Pes gynostemii ovarium fere continuus, cum gynostemio angulum acutum faciens, sublinearis, basin versus sensim dilatatus, apice brevissime incurvus, fere dimidio inferiore sepalis lateralibus adnatus, c. 0.08 cm. longus, apice libero fere 0.05 cm. longo. Ovarium oblique obconicum, c. 0.05 cm. longum; pedicellus tenuior, c. 0.05 cm. longus.

Dutch New-Guinea: In the northern part, Mamberamo-river. (W. FEUILLETAU DE BRUYN n. 147, 10 October 1914; "flowers white").

A species allied to *B. fractiflexum* J. J. S. etc., but well characterized by the very narrow petals.

Bulbophyllum fractiflexum J. J. S. in Bull. Dép. Agr. Ind. néerl. XIX (1908), 6; in Nova Guinea VIII (1909), 93, t. XXXI, 102.

Dutch New-Guinea: Without locality. (Cult. in Hort. Bog. II M, b 159).

Sect. Uncifera (cum Manobulbon).

Bulbophyllum sculptum J. J. S. n. sp.

Tab. LXXVI, 111.

Rhizoma longissimum, repens, radicans, filiforme, c. 0.07 cm. diam., internodiis ad c. 1.3 cm. longis, vaginis tubulosis internodiis brevioribus. Pseudobulbi parvi, c. 3—6.5 cm. distantes, oblique ovoidei, c. 0.35—0.4 cm. longi, 0.325—0.34 cm. diam., 1-folii. Folium recurvum, oblongum, obtusum, basi breviter contractum, margine irregulariter subcrenulatum, in utraque parte canaliculae longitudinalis convexum, c. 0.8—1 cm. longum, 0.3—0.35 cm. latum. Inflorescentiae e nodis rhizomatis, brevissimae, 1—2-florae, pedunculo c. 0.45—0.8 cm. longo, vaginulis c. 2 tubulosis donato. Bracteae basi pedicellum amplectentes, valde concavae, suborbiculares, obtusae, costa media dorso prominula, c. 0.28 cm. longae. Flores in sectione mediocres. Sepalum dorsale concavum, apice recurvum, triangulo-lanceolatum, apicem versus sensim angustatum, acutiusculum, nervis dorso inferne prominulis, bene 1 cm. longum, 0.33 cm. latum. Sepala lateralia oblique triangulo-lanceolata, sensim angustata, satis acuta, concava, nervis 3 dorso inferne prominulis, bene 1 cm. longa, 0.35 cm. lata. Petala porrecta, parallela, oblique subovato-elliptica, anguste obtusa, basi cuneata, leviter concava, superne leviter convexa, 1-nervia, fere 0.5 cm. longa, 0.24 cm. lata. Labellum mobile, conspicue curvatum, carnosum, paulo infra medium conspicue constrictum, parte inferiore canaliculata cum marginibus erecto-patentibus convexisque inexplanata ovata, incrassatione parva ad basin in utraque canaliculae parte, canalicula usque $^2/_5$ partes infra apicem labelli producta, parte antica recurva inexplanata ovata

obtusa convexa, 3-nervium, nervis exterioribus ramosis, inexplanatum fere 0.3 cm. longum, ad hypochylium epichyliumque 0.26 cm. latum. Gynostemium crassum, basi sensim in pedem abiens, c. 0.14 cm. longum, clinandrio parvo excavato, margine postico subaequaliter 3-dentato, dente intermedio recurvulo antheram gerente, auriculis conspicuis bilobulis, lobulo postico triangulo dentiformi, lobulo antico multo majore oblique oblongo falcato-decurvo obtuso. Anthera cucullata, orbicularis, basi bilobula, connectivo convexo-cristato apice in rostrum semiovale rotundatum producto, c. 0.07 cm. lata. Stigma in excavatione longitudinali lanceolata longe in pedem gynostemii decurrente sed marginibus haud vel vix callum formante situm. Pes gynostemii cum ovario angulum obtusum faciens, $^3/_5$ partibus superioribus a sepalis lateralibus liber, obtusangule incurvus, parte inferiore tenuior, apice incurvulo in dentes 2 falcato-recurvos dilatato, c. 0.26 cm. longus. Ovarium obconicum, 6-sulcatum, c. 0.125 cm. longum; pedicellus teres, c. 0.15 cm. longus, 0.05 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3220 m., slight slope, epiphytical on low shrubs. (H. J. LAM n. 1767, 27 October 1920; "pseudobulbs violet-brown, leaf green, light green beneath, generally suffused with violet or violet, sepals and petals light yellowish red, lip with yellow top, purple inside, column white with light yellow tip").

In the 1—2-flowered inflorescences this agrees with *B. manobulbum* Schltr., but the pseudobulbs are much shorter, the leaves smaller, the flowers larger, the lip conspicuously constricted, etc.

Description from a specimen preserved in alcohol.

Bulbophyllum cavibulbum J. J. S. n. sp.

Tab. LXXVI, 112.

Frutescens. Rhizoma firmum, teres, c. 0.225 cm. diam., basi tantum radicans, vaginis tubulosis carinatis apiculatis tectum. Pseudobulbi c. 1.9—2.4 cm. distantes, in basi rhizomatis aggregati, spiraliter dispositi, rhizomati adpressi et antice (subtus) valde canaliculati, subovales, truncati, deinde rugulosi, c. 0.6 cm. longi, 0.4 cm. lati, 1-folii. Folium oblongum, subovatum, acutum, basi brevissime contractum conduplicatumque, acute marginatum, apice minutissime crenulatum supra obtusangule canaliculatum cum lateribus convexis, costa media dorso ad apicem prominula, carnosum, c. 2.1—2.7 cm. longum, 0.75—0.95 cm. latum. Inflorescentiae e nodis rhizomatis, brevissimae, 2-florae, pedunculo c. 0.5 cm. longo, vaginulis c. 3 imbricatis tubulosis superioribus accrescentibus omnino obtecto. Bracteae majusculae, conduplicato-canaliculatae, oblongo-ovatae, acutae, basi rachidem amplectentes, ad c. 0.95 cm. longae. Flores in sectione magni, c. 2.2 cm. longi, sepalis subparallelis. Sepalum dorsale e basi subovali-elliptica longe canaliculato-caudatum, concavum, parte lata minutissime ciliolatum, 3-nervium, c. 2.15 cm. longum, parte lata c. 0.8 cm. longa, 0.4 cm. lata. Sepala lateralia e basi oblique oblongo-triangula concava longe canaliculato-caudata, parte lata minutissime ciliolata, 3-nervia, c. 2.3 cm. longa, parte lata c. 0.8 cm. longa, 0.4 cm. lata. Petala porrecta, parallela, ovato-elliptica, apice angustata, vix acuminata, subacuta vel anguste obtusa, leviter concava, costa media dorso prominula, 1—3-nervia, glabra, c. 0.54 cm. longa, fere 0.3 cm. lata. Labellum mobile, recurvulum, carnosum, oblongum, simplex, apice angustatum, obtusum, parte inferiore marginibus erectis convexis canaliculatum, canalicula in c. $^2/_3$ partibus supra basin evanescente basi dilatata et incrassationibus 2 brevibus longitudinalibus convexis instructa, marginibus in c. $^1/_3$ supra

basin recurvis valde convexum et incrassatione lata longitudinali convexa canaliculis limitata usque ad apicem producta instructum, eo superne late tricostatum, subtus alte lateque canaliculatum, glabrum, c. 0.4 cm. longum, 0.2 cm. latum. Gynostemium breve, crassum, c. 0.15 cm. longum, clinandrio excavato, apice breviter obtuse triangulo, lateribus latis 3-lobulatis, lobulis brevissimis dentiformibus obtusis, lobulo tertio bene majore oblique oblongo falcato-decurvo obtuso. Anthera cucullata, suborbicularis, basi bilobula, apice in rostrum triangulum apice leviter contractum obtusum producta, connectivo cristato-incrassato, c. 0.075 cm. lata. Pollinia 4, valde inaequalia, lateraliter compressa, 2 exteriora late oblique triangulo-obovata, c. 0.05 cm. longa, 2 interiora minima tenuiaque. Stigma alte excavatum, longitudinale, ovale, in canalicula longitudinali e marginibus gynostemii elevatis acutisque in $^1/_3$ infra apicem pedis gynostemii V-formiter confluentibus sed non callum formantibus situm. Pes gynostemii cum ovario gynostemioque angulos obtusos faciens, incurvus, apicem versus angustatus, apice a sepalis lateralibus liber obtusus, breviter retuso-lobulatus, c. 0.3 cm. longus. Ovarium obconicum, 6-sulcatum, c. 0.25 cm. longum; pedicellus teres, c. 0.375 cm. longus.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3230 m., open slope, epiphytical. (H. J. LAM n. 1618, 17 October 1920; "pseudobulbs red-brown, leaves dark purplish green above lighter beneath, bracts red or reddish yellow, sepals pale red or reddish yellow, petals red or reddish yellow, lip reddish yellow or yellow, column light yellow"). Same locality, 3260 m., open nearly flat marshy country, terrestrial. (H. J. LAM n. 1689 (type), 22 October 1920; "pseudobulbs violet, leaf dark greenish violet, sepals yellow suffused with red, column yellow, ovary yellowish red"; n. 2010, 15 November 1920; "pseudobulbs orange-brown, leaf shining, very dark violet-brown above, dirty green (violet-green) beneath, flower rosy yellow, column yellow").

A very distict species with the habit of the section *Epibulbon*. It has the largest flowers in the section, with long caudate sepals.

Under n. 1618 two types of flowers occur, the one agreeing with those described above, another with blunter petals, a bidentate anther and broader pollinia. As the material preserved in alcohol was much crumbled to pieces, it is not possible to say what belongs together.

Description from materials preserved in alcohol.

Bulbophyllum acutibrachium J. J. S. n. sp.

Tab. LXXVI, 113.

Rhizoma elongatum, repens, e nodis radicans, teres, pars adest 50 cm. longa, c. 0.13 cm. diam., internodiis c. 1—1.6 cm. longis, vaginis tubulosis obtusis internodiis multo brevioribus. Pseudobulbi c. 6.5—11 cm. distantes, cum rhizomate angulum anguste acutum facientes, tenues, c. 1—1.3 cm. longi, vaginis tubulosis omnino inclusi, 1-folii. Folium lanceolatum, apicem versus angustatum, obtusum, vix retusum, basi acuta breviter satis abrupte petiolato-contractum, margine praesertim versus apicem celluloso-crenulatum, supra in utraque parte canaliculae longitudinalis convexum, carnosulum, c. 3.25—5.5 cm. longum, 0.66—0.92 cm. latum, petiolo sulcato-conduplicato, transverse ruguloso, c. 0.23—0.45 cm. longo. Inflorescentiae e nodis rhizomatis, laxe pauciflorae, pedunculo tenui, c. 1.4—2.3 cm. longo, vaginulis c. 5 tubulosis apice leviter ampliatis ad c. 0.45 cm. longis donato, rachide c. 0.7—0.9 cm. longa. Bracteae patentes, ovato-triangulae, subacutae, concavae, 1-nerviae, bene 0.4 cm. longae, 0.22 cm. latae. Flores 3—5, in sectione mediocres, c. 0.85 cm. longi, sepalis parallelis. Sepalum dorsale lanceolatum,

acutiusculum, concavum, apice conduplicatum, 3-nervium, fere 0.9 cm. longum, 0.23 cm. latum. Sepala lateralia oblique lanceolata, acuta, concava, apice conduplicata, marginibus proximis anguste inflexis, 3-nervia, costa media dorso prominula, fere 1 cm. longa, 0.25 cm. lata. Petala porrecta, oblique elliptica, obtusa, concava, 1-nervia, c. 0.375 cm. longa, 0.175 cm, lata. Labellum unguiculo brevi tenui pedi gynostemii insertum, mobile, carnosum, bene curvatum, oblongo-panduratum, medio fere constrictum, dimidio inferiore lateribus erecto-patentibus late canaliculatum cum costulis 2 inconspicuis longitudinalibus, intus supra basin bidenticulatum, parte antica convexum medio leviter concavum apice recurvum cum margine recurvo, inexplanatum 3-lobulum obtusumque, subtus canalicula longitudinali apicem versus valde dilatata marginibus convexis limitata instructum, glabrum, 3-nervium, c. 0.2 cm. longum, 0.15 cm. latum. Gynostemium breve, altum, lateraliter compressum, c 0.14 cm. longum, marginibus in partem inferiorem pedis gynostemii decurrentibus excavationem altam angustam a latere visam triangulam formans, clinandrio excavato, apice dentiformi, lateribus latis trilobulatis, lobulo postico rotundato, intermedio aequilongo obtuse triangulo, antico bene longiore deflexo recto subulato acuto. Anthera cucullata, suborbicularis, connectivo convexo-incrassato apice in rostrum satis conspicuum obtusum producto. Stigma in excavatione gynostemii pedisque situm, alte excavatum, longitudinale, oblongum. Pes gynostemii cum ovario angulum obtusum faciens, incurvus, linearis, inexplanatus c. 0.2 longus, dimidio inferiore sepalis lateralibus adnatus et cum gynostemio excavationem faciens, excavationis marginibus in medio confluentibus abrupte terminantibus et dentem obtusum formantibus, parte superiore liber, apice paulo dilatatus truncatusque. Ovarium obconicum, 6-sulcatum, in sulcis subfurfuraceum, c. 0.17 cm. longum; pedicellus tenuior, teres, c. 0.125 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2530 m., epiphytical in moss-grown forest. (H. J. LAM n. 1952, 11 November 1920; "roots white, leaves more or less fleshy, leaves above very dark purple almost black passing into light green at the base, lighter beneath and with a little green, petiole light green, peduncle and bracts pale brownish yellow, sepals and petals pale dirty yellow with a little red, column pale brown, fruit reddish yellow").

Differing from all species of the section hitherto described in the straight acute arms of the column. In the broad excavate column it resembles *B. disjunctibulbum* J. J. S. and probably a few species described by Dr. SCHLECHTER.

Description from herbarium and materials preserved in alcohol.

Bulbophyllum disjunctibulbum J. J. S. n. sp.

Tab. LXXVI, 114.

Rhizoma longissimum, repens, ramosum, teres, initio vaginis tubulosis acuminatis tectum, e nodis radices 1 vel raro 2 emittens, internodiis c. 1—1.5 cm. longis. Pseudobulbi c. 17.5—25 cm. distantes, cum rhizomate angulum acutum facientes, oblongi, truncati, sicco c. 1.8—2.3 cm. longi, 1-folii. Folium lanceolatum, apice angustatum, anguste obtusum conduplicatumque, basi sensim petiolato-angustatum conduplicatumque, costa media supra sulcata subtus carinata, sicco rigidule coriaceum, c. 11—13.25 cm. longum, 1.65—2 cm. latum. Inflorescentiae e basi pseudobulborum, elongatae, laxe pluriflorae, pedunculo tenui, c. 14.5—18 cm. longo, vaginulis c. 6—7 tubulosis donato, rachide c. 11.5—13.5 cm. longa, internodiis c. 1.2—2.1 cm. longis. Bracteae patentes, oblongo-ovatae, acutiusculae, concavae, 5-nerviae, glabrae, c. 0.5—0.6 cm.

longae. Flores c. 8—9, in sectione minusculi, quaquaversi, c. 0.7 cm. longi. Sepalum dorsale ovatum, longius acuminatum, acutum, concavum, 3-nervium, nervis exterioribus basi furcatis, c. 0.7 cm. longum, bene 0.3 cm. latum. Sepala lateralia mentum late rotundatum formantia, divergentia, oblique ovata, longius acuminata, marginibus superne incurvis, acuta, concava, 5-nervia, c. 0.725 cm. longa, 0.4 cm. lata. Petala porrecta, parallela, gynostemio adpressa, oblique ovata, brevissime apiculato-acuminata, vix concava, 3-nervia, c. 0.42 cm. longa, 0.27 cm. lata. Labellum mobile, curvatum, carnosum, subtrilobum, parte inferiore lateribus erectis convexis canaliculatum, marginibus fere in medio labelli utrinque lobulum rotundatum formantibus, parte antica (lobo intermedio) convexa angulato-obtusa, subtus canaliculatum, glabrum, maceratum c. 0.425 cm. longum. Gynostemium breve, crassum, lateraliter compressum, c. 0.25 cm. longum, marginibus in partem inferiorem pedis gynostemii decurrentibus excavationem altam angustam longitudinalem a latere visam triangulam formans, clinandrio excavato, apice (filamento) recurvulo breviter triangulo breviter filiformi-producto, lateribus latis bidentatis antice in lobulum oblique oblongum deorsum spectantem leviter falcatulum obtusum productis. Anthera cucullata, macerata leviter a latere compressa, supra visa ovalis, apice in rostrum breve obtusum producta, basi bilobula, connectivo cristato, c. 0.08 cm. longa. Pollinia 4, lateraliter compressa, valde inaequalia, triangula, c. 0.07 cm. longa, interiora quam exteriora multo minora tenuioraque. Rostellum triangulum. Stigma in excavatione gynostemii pedisque situm, angustum, longitudinale. Pes gynostemii cum ovario angulum obtusum fere rectum faciens, linearis, inexplanatus c. 0.375 cm. longus, parte inferiore c. 0.225 cm. longa rectus sepalis lateralibus adnatus et cum gynostemio excavationem altam faciens, ubi marginibus excavationis confluentibus et abrupte obtusangule terminantibus, parte superiore c. 0.2 cm. longa obtusangule incurvus, liber, convexus, apice incurvus et membrana parva tenui labellum gerente terminatus. Ovarium 6-sulcatum, c. 0.2 cm. longum; pedicellus teres, c. 0.5 cm. longus, c. 0.1 cm. supra basin articulatus. Capsula clavata, c. 1.3 cm. longa, in valvas 6 lineares alternatim latiores angustioresque basi apiceque connatas dehiscens, pedicello c. 0.9—1.1 cm. longo.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., slope to the north, epiphytical. (H. J. LAM n. 1541, 7 September 1920; "pseudobulbs green, leaves dark green above, green beneath, peduncle at first green or greenish brown, in fruit red, bracts brown-yellowish green, flowers yellow, a little greenish, lip in the centre above dark brown, ovary yellowish green, fruit green tinged red on ribs and pedicel").

According to the description this species resembles in its vegetative parts much *B. perlongum* Schltr. The flowers are, however, very much smaller, differently coloured and shortly pedicelled. The lip also seems to be different and SCHLECHTER did not mention the curious column. The pollinia are very broad.

Description from a dried specimen with one flower and two fruits.

Sect. Hedyothyrsus.

Bulbophyllum squamiferum J. J. S. n. sp.

Tab. LXXVII, 115.

Rhizoma elongatum, repens, teres, c. 0.2 cm. diam., vaginis tubulosis tectum, ad basin pseudobulborum tantum radicans, internodiis elongatis, c. 1 cm. longis. Pseudobulbi c. 6.5 cm. distantes, e basi lata suborbiculari oblique conico-contracti, obtusi, c. 0.85—1.1 cm. alti,

1—1.35 cm. diam., 1-folii. Folium erectum, petiolatum, lanceolatum, apice angustatum, acutum, basi sensim in petiolum contractum, supra in utraque parte costae mediae supra sulcatae subtus obtuse prominentis convexum, carnosum, c. 10 cm. longum, 2.25—2.45 cm. latum; petiolus canaliculatus, c. 1.4—1.7 cm. longus. Inflorescentiae ad basin pseudobulborum, racemosae, laxe pluriflorae, pedunculo tereti, c. 17 cm. longo, bene 0.1 cm. diam., vaginulis c. 4—5 tubulosis breviter acuminatis ad c. 0.75 cm. longis donato, rachide fractiflexa, internodiis c. 0.7—1.2 cm. longis. Bracteae oblongae, subulato-acuminatae, concavae, c. 0.35 cm. longae. Flores vagi, majusculi, patentissimi. Sepalum dorsale lanceolato-triangulum, apicem versus sensim angustatum, concavum cum fascia mediana longitudinali convexa, dorso canaliculatum, 3-nervium, nervis dorso valde prominentibus, intermedio in canalicula, c. 1.8 cm. longum, 0.44 cm. latum. Sepala lateralia porrecta, intermedio longiora, marginibus proximis fere ad apicem in laminam subovato-lanceolatum basi concavam conglutinata, apicem versus sensim angustata, apice libero subulata, 3-nervia, c. 3 cm. longa, utrumque basi c. 0.4 cm. lata. Petala parva, porrecta, parallela, oblonga, obtusa, supra basin margine utrinque angulum obtusum formantia, concava, 1-nervia, c. 0.46 cm. longa, 0.25 cm. lata. Labellum parvum, mobile, valde recurvum, carnosum, basi truncatum, inferne marginibus erectis supra basin paulo rotundato-dilatatis late canaliculatum, canalicula in medio labelli angusta, costis parallelis basi divergentibus in $^3/_5$ partibus supra basin labelli confluentibus et a latere visis gibbum formantibus limitata, costa tertia minore in canalicula, parte antica convexum, apice rotundatum, subtus alte sulcatum, sulco costis minute papillosis limitato, c. 0.25 cm. longum, 0.16 cm. latum. Gynostemium breve, ovario tenuius, c. 0.15 cm. longum, clinandrio obliquo, concavo, auriculis leviter divergentibus, oblique triangulis, acutis, margine inferiore obtusangule dilatatis, vel melius oblique quadrangulis. Anthera cucullata, orbicularis, apice in rostrum breve recurvum triangulum convexum producta, connectivo incrassato, c. 0.075 cm. lata. Pollinia 4, oblique oblonga, postice oblique truncata, lateraliter compressa, extus convexa, c. 0.075 cm. longa, 2 interiora minima. Stigma magnum, profunde excavatum, faciem anticam gynostemii omnino occupans. Pes gynostemii cum ovario angulum obtusum faciens, valde incurvus, latiusculus, oblongus, valde a dorso compressus, truncatus, callo conspicuo patentissimo transverso carnoso quadrangulo truncato subretuso marginibus leviter incurvis supra concavulo cum incrassatione longitudinali a latere viso triangulo ad basin infra stigma, c. 0.25 cm. longus. Ovarium 6-sulcatum, c. 0.35 cm. longum; pedicellus supra basin articulatus, c. 0.35 cm. longus.

Dutch New-Guinea: Without locality. (A. PULLE, without number, January 1913).

This differs from *B. calothyrsus* Schltr. in the colour of the larger flowers, the narrower dorsal sepal, longer and narrower petals, a less abruptly recurved lip not constricted at the base of the midlobe; from *B. hedyothyrsus* Schltr. in the broader leaves, smaller differently coloured flowers, an orbicular anther; and from *B. chloranthum* Schltr. in the larger differently coloured flowers and the auricles of the lip not surpassing the anther.

I have seen none of these plants.

The flowers are described as yellow or light yellow, the lateral sepals marked with brown outside.

Description from specimens preserved in alcohol.

Bulbophyllum manifestans J. J. S. n. sp.

Tab. LXXVII, 116.

Rhizoma longe repens, ramosum, prope pseudobulbos tantum radicans, teres, vaginis tubulosis internodia paulum superantibus mox fatiscentibus omnino obtectum, internodiis c. 0.8—1.2 cm. longis. Pseudobulbi c. 3.5—7 cm. dissiti, oblique depresso-conici, sicco 0.8—1 cm. diam., 0.7—0.9 cm. alti. Folium subovato-oblongum ad lanceolatum, apicem versus angustatum, obtusiusculum, basi obtusa abrupte in petiolum contractum, costa media sicco dorso prominente, margine recurvo acuto, coriaceum, c. 4.5—6.75 cm. longum, 1.4—2.1 cm. latum; petiolus brevis, canaliculatus, c. 0.3—0.45 cm. longus. Inflorescentiae e basi pseudobulborum, folium longe superantes, laxe pauciflorae, pedunculo tenui, c. 12.5 cm. longo, inferne vaginulis c. 5 tubulosis donato, rachide flexuosa, tenui, glabra, c. 5.25 cm. longa, internodiis c. 0.5—1.5 cm. longis. Bracteae parvae, triangulae, concavae. Flores in sectione inter minores. Sepalum dorsale basi gynostemio adnatum, angulato-oblongo-ovatum, apice marginibus incurvis canaliculato-acuminatum acuteque subulatum, concavum, trinervium, c. 0.97 cm. longum, 0.38 cm. latum. Sepala lateralia ad partem inferiorem pedis gynostemii decurrentia, oblique ovato-lanceolata, falcata, apicem versus sensim angustata, bene subulato-acuminata, undulata (?), 3-nervia, c. 1.25 cm. longa, 0.34 cm. lata. Petala multo minora, oblique ovata, obtusa, 1-nervia. c. 0.38 cm. longa, 0.225 cm. lata. Labellum parvum, mobile, 3-lobum, erectum, basi satis lata truncata medio tantum affixum, valde recurvum, supra costa longitudinali valde convexa inferne furcata instructum, brachiis costae in lobos laterales decurrentibus, inexplanatum c. 0.2 cm. longum; lobi laterales erecti, rotundati, intus convexi; lobus intermedius decurvus, valde recurvus, oblongus, rotundatus, explanatus c. 0.17 cm. longus, 0.12 cm. latus. Gynostemium cum anthera bene 0.2 cm. longum, clinandrio obliquo concavo margine minute denticulato, filamento brevissimo, auriculis obliquis subincurvis acutis margine antico bene obtusangule dilatatis. Anthera cucullata, suborbicularis, connectivo convexo-costuliformi apice in rostrum producto, c. 0.1 cm. longa. Rostellum membraniforme. Stigma conspicuum, alte excavatum, longitudinale, ovale, faciem inferiorem gynostemii fere omnino occupans. Pes gynostemii cum ovario angulum obtusum faciens, porrectus, linearis, basi dilatatus et lamella porrecta horizontali cum parte antica pedis angulum acutum faciente transverse rectangula instructus, dimidio superiore a sepalis lateralibus liber, hamato-incurvus, apice breviter dilatatus truncatusque, inexplanatus c. 0.25 cm. longus. Ovarium pedicellatum c. 0.5 cm. longum.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 600 m., epiphytical in forest. (W. FEUILLETAU DE BRUYN n. 98, 10 September 1914; "flowers red").

The above species is the second of the section with free lateral sepals. It can be distinguished from *B. solutisepalum* J. J. S. by its shorter rachis, smaller differently coloured flowers, different lip and anther.

Description from herbarium.

Bulbophyllum solutisepalum J. J. S. n. sp.

Tab. LXXVII, 117.

Rhizoma elongatum, repens, teres, initio viride et vaginis tubulosis tectum, deinde suberosum, ad basin pseudobulborum tantum radicans, c. 0.25 cm. diam. Pseudobulbi c. 2.5—6.75 cm.

distantes, e basi lata suborbiculari oblique depresse conico-contracti, plerumque sulco longitudinali instructi, rugulosi, nitiduli, dilute virides, c. 0.8—1.1 cm. alti, 1.1—1.2 cm. diam., 1-folii, initio nonnullis vaginis tubulosis cincti, vagina suprema pseudobulbum longe superante. Folium erectum, lanceolatum, apice semiconduplicatum et acutum vel subacutum, basi breviter petiolato-contractum, supra obtusangule concavum, subtus obtusangule convexum, costa media supra sulcata, carnosum, supra nitidule viride, subtus opacum dilute viride, c. 6.75—7.5 cm. longum, 1.9—2.1 cm. latum, petiolo c. 0.5—0.7 cm. longo. Inflorescentiae e basi pseudobulborum ortae, adscendentes, elongatae, rachide acutangule fere rectangule deflexae, laxe plurifiorae, pedunculo tereti, pallide viridi, c. 16.5 cm. longo, 0.13 cm. diam., vaginulis c. 5 tubulosis acuminatis carinatis pallidis ad c. 0.7 cm. longis donato, rachide recta, tereti, pallide viridi, c. 15 cm. longa. Bracteae adpressae, triangulae, acutae, concavae, semipellucidae, pallide virescentes, ad c. 0.5 cm. longae. Flores c. 12, mediocres, vagi, patentissimi, leviter odorati, dilute flavi, c. 3.3 cm. longi, 7 dies viriditatem conservantes. Sepalum dorsale adscendens, triangulo-lanceolatum, longe attenuatum, acutum, fascia longitudinali intus convexum, marginibus apiceque concavum, nervis 3 dorso valde prominentibus, c. 2.25 cm. longum, 0.64 cm. latum. Sepala lateralia libera, porrecta, divergentia, lanceolato-linearia, apicem versus sensim angustata, acuta, basi medio tantum affixa, marginibus supra basin angulum obtusum formantia, apicem versus canaliculata, 3-nervia, praesertim costa media dorso incrassata, c. 3.35 cm. longa, supra basin 0.53 cm. lata. Petala parva, parallela gynostemio porrecta, ovalia, obtusa, basi lata, concava, 1-nervia, semipellucida, c. 0.46 cm. longa, 0.325 cm. lata. Labellum parvum, mobile, valde curvatum, inferne marginibus erectis supra basin in lobulum erectum obtusum margine antico recurvum dilatatis late triangulo-canaliculatum, canalicula costis basi divergentibus et in lobulos decurrentibus in medio labelli parallelis et confluentibus deinde evanescentibus limitata, costula humili in canalicula, parte antica (lobo intermedio) recurvum, obtusum, convexum, transverse rugulosum, subtus canalicula alta costis limitata instructum, glabrum, c. 0.3 cm. longum. Gynostemium crassum, subconicum, basi incrassatum, viridi-album, c. 0.22 cm. longum, clinandrio obliquo, triangulo, concavo, auriculis leviter divergentibus, triangulis, margine inferiore obtusangule dilatatis, fere subquadrangulis, antheram aequantibus. Anthera cucullata, ovata, apice triangulo-producta, subacuta, connectivo convexo-incrassato, pallide virescens, c. 0.06 cm. lata. Pollinia oblonga, dilute flava. Stigma conspicuum, totam faciem inferiorem gynostemii occupans, marginibus gynostemii elevatis altum, oblongo-quadrangulum, basin versus dilatatum. Pes gynostemii cum ovario angulum obtusum faciens, apice valde incurvus, dimidio inferiore tantum cum sepalis lateralibus connatus, oblongus, apice truncatus, lamella conspicua porrecta gynostemio parallela transverse quadrangula truncata vix retusa subtus convexa carnosa ad basin infra stigma, viridi-albus, c. 0.25 cm. longus. Ovarium obconicum, 6-sulcatum, dilute viride, c. 0.25 cm. longum, cum pedicello c. 0.37 cm. longo subsigmoideum.

Dutch New-Guinea: In the southern part, upper Eilanden-river. (B. BRANDERHORST, liv. plant cult. in Hort. Bog. sub n. 293).

The lateral sepals in the section *Hediothyrsus* are not connate, as SCHLECHTER suggested, but only cohering. In the species described above they are even wholly free and diverging.

Description from living specimens.

Sect. Lepanthanthe.

Bulbophyllum lonchophyllum Schltr. in Fedde Rep. XVI (1920), 123.

Tab. LXXVII, 118.

Rhizoma tenue, basi radicans, c. 12 cm. longum, vaginis conspicuis superne accrescentibus alternatim bifariis imbricatis conduplicatis basi tubulosis erecto-patentibus superioribus patentibus acutis dense minute verruculosis pseudobulbos obtegentibus c. 1.1—1.2 cm. longis tectum. Pseudobulbi c. 1.3—1.5 cm. distantes, parvi, rhizomati adpressi et eo basi adnati, c. 0.3 cm. longi, 1-folii. Folium anguste lanceolatum, sensim acutatum, basi sensim angustatum conduplicatumque, probabiliter crasse carnosum, sicco crasse spongioso-coriaceum, c. 3.5—4.6 cm. longum, 0.45—0.5 cm. latum. Inflorescentiae e rhizomate, cum floribus c. 1.4 cm. longae, basi biramosae, dense pluriflorae, pedunculo c. 0.5—0.55 cm. longo, nonnullis vaginulis tubulosis donato, rachide abbreviata, c. 0.1 cm. longa. Bracteae approximatae, quaquaversae, erecto-patentes, oblongae, acutae, longe mucronatae, carinatae, concavae, membranaceae, ad c. 0.5 cm. longae. Flores c. 8, parvae, erectae, c. 0.25 cm. longae, sepalis parallelis. Sepalum dorsale orbiculare cum mucrone conspicuo recto tereti obtuso c. 0.075 cm. longo ad apicem, valde concavum, 3-nervium, costa media dorso prominente, totum c. 0.26 cm. longum, 0.18 cm. latum. Sepala lateralia oblique ovato-orbicularia, mucrone sepali dorsalis, valde concava, 3-nervia, tota c. 0.275 cm. longa, 0.175 cm. lata. Petala parva, e basi brevissime unguiculato-contracta oblique elliptica, apice oblique bidentata, erosa, concava, 1-nervia, fere 0.125 cm. longa, bene 0.05 cm. lata. Labellum membrana longiuscula tenui 1-nervia pedi gynostemii insertum, mobile, parvum, 3-lobum, c. 0.18 cm. longum, ad lobos laterales 0.125 cm. latum; lobi laterales basilares, basi erecti, deinde divergentes, falcati, oblongi, obtusi, antice valde convexi, dorso canaliculati; lobus intermedius multo major, porrectus, ovatus, acuminatus, obtusiusculus, supra subtusque convexus, excavatione parva supra ad basin, subtus alte longitudinaliter canaliculatus, carnosus, parce papillosus. Gynostemium breve, latiusculum, dente obtuso utrinque ad marginem, c. 0.1 cm. longum, clinandrio concavo marginibus latis tenuibus erosulis. Anthera cucullata, longitudinaliter conduplicata, obtusa, connectivo basin versus altissimo cristiformi, bene 0.05 cm. longa. Pollinia oblique subovalia, extus convexa, intus plana, fere 0.05 cm. longa. Pes gynostemio cum ovario angulum obtusum, cum gynostemio angulum rectum faciens, oblongus, apice a sepalis lateralibus liber et paululum dilatatus, c. 0.075 cm. longus. Ovarium pedicellatum c. 0.25 cm. longum, in 0.3 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, northern slope, 1420 m., epiphytical, dependent. (H. J. LAM n. 1493, 4 October 1920; "leaves nicely dark red, dull, a little yellowish above, fleshy, sheaths bright brown, bracts and young leaves white and rosy, flowers light yellow").

I take this to be plant intended by Dr. SCHLECHTER. A few divergences in our descriptions may be attributed to the fact that SCHLECHTER had only dry material at his disposal.

Description from a dry specimen and a flower preserved in alcohol.

Sect. Trachyrhachis.

Bulbophyllum navigioliferum J. J. S. n. sp.

Tab. LXXVII, 119.

Rhizoma elongatum, repens, ramosum, radicans, vaginis tubulosis acuminatis internodiis

multo brevioribus tectum, internodiis elongatis. Pseudobulbi c. 3.5—5.3 cm. distantes, parvi, vaginulis inclusi, ovoidei, sicco c. 0.3 cm. longi, 1-folii. Folium anguste oblongum, suboblique rotundatum, vix retusum cum apiculo minuto, basi cuneato-angustatum, coriaceum, sicco c. 4.5—5 cm. longum, 0.95—1.15 cm. latum. Inflorescentiae e basi pseudobulborum, elongatae, dense multiflorae, pedunculo tereti, magnam partem laevi superne verrucoso muriculatoque, c. 25 cm. vel plus longo, vaginulis c. 5 tubulosis acuminatis acutis valde carinatis superioribus in carina crenulatis instructo, rachide muriculata, c. 5.75 cm. longa, internodiis inferioribus c. 0.4 cm. longis, superioribus minoribus. Bracteae erecto-patentes, conduplicatae, naviculares, apice subulato-acuminatae recurvulaeque, ciliolatae, carinatae, carina pectinato-muriculatae, dorso papillosae, ad c. 0.5 longae. Flores minimi, triseriales, spiraliter dispositi, c. 0.24 cm. longi. Sepalum dorsale oblongum, valde lateraliter compresso-naviculare, apice valde incurvum et bulla globosa sessili instructum, ciliolatum, carinatum, carina muricibus paucis (c. 6) patentissimis donatum, dorso omnino papillosum, 3-nervium, fere 0.25 cm. longum. Sepala lateralia porrecta, parallela, contigua, inexplanata ambitu valde oblique oblongo-obovata, basi subangustata leviter spathulata, apice valde oblique dilatata conduplicato-sacculata, bulla ovali sessili terminata, dorso superne muricibus paucis (c. 5) patentissimis papillosis carinata, papillosa, 3-nervia, c. 0.16 cm. longa, fere 0.1 cm. lata. Petala parva, porrecta, parallela, gynostemio adpressa, oblique obovata, apice parce denticulata, ceterum ciliolata, 1-nervia, c. 0.1 cm. longa, 0.06 cm. lata. Labellum mobile, 3-lobum, sigmoideum, apice recurvum, supra longitudinaliter sulcatum cum costula brevi longitudinali ad basin et utroque latere convexum, subtus leviter sed latiuscule canaliculatum cum costula longitudinali, glabrum, c. 0.14 cm. longum, ad lobos laterales fere 0.05 cm. latum, lobis lateralibus basilaribus, parvis, erectis, falcato-triangulis, acutis, convexis, margine antico recurvis, lobo intermedio spathulato-oblongo, obtuso, c. 0.12 cm. longo, basi fere 0.03 cm. apice 0.05 cm. lato. Gynostemium minutum, cum anthera c. 0.05 cm. longum, clinandrio excavato, filamento filiformi, auriculis divergentibus, triangulis, acutis, leviter concavis, pede minimo incurvo, tenui, a sepalis lateralibus libero. Anthera cucullata, suborbicularis, apice rotundata recurvulaque, connectivo costiformi convexo, fere 0.05 cm. lata. Ovarium rotundato-trigonum, 6-sulcatum, c. 0.125 cm. longum; pedicellus ovario multo crassior, cum eo articulatus, teres, c. 0.3 cm. longus, in bractea inclusus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1450 m., epiphytical. (H. J. LAM n. 1900, 3 November 1920; "roots greenish white, sheaths membranous brown, leaf fleshy, shining above, dull light green beneath or somewhat yellowish green, pseudobulbs a little darker, peduncle brownish yellow with brown bracts, flowers light green with the tips red to dark red, ovary dark red").

In the shape of the lip this species resembles *B. antennatum* Schltr. and in a less degree *B. bulliferum* J. J. S., and in the form of the petals *B. barbilabium* Schltr.

The flowers are arranged distinctly in 3 rows. The anther is very large in proportion to the small column, and the column-foot is very small and free from the lateral sepals. The bracts and sepals are conspicuously boat-shaped.

Description from herbarium and a flower preserved in alcohol.

Bulbophyllum erinaceum Schltr. Orch. D. N. Guinea (1913), 879.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, east-side, 1420 m., epiphytical in low moss-grown *Vaccinium*-forest. (H. J. LAM n. 1440, 1 October 1920).

Sect. Hymenobràctea.

Bulbophyllum infundibuliforme J. J. S. in Ic. bog. II (1903), 103, t. CXX, A; in N. Guinea XII (1916), 414. — *B. garupinum* Schltr. Orch. D. N. Guinea (1913), 752.

Dutch New-Guinea: In the northern part, Idenburg-river, highlands, 400 m. (W. FEUILLETAU DE BRUYN n. 81, 2 January 1914).

Bulbophyllum hymenobracteum Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 204; Orch. D. N. Guinea (1913), 753.

Schouten Islands: Biak, south-coast, Bosnik. (W. FEUILLETAU DE BRUYN n. 371, 2 September 1915; "grows in full sun; flowers white with a light rosy centre").
Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac. (H. J. LAM 1920, liv. pl. cult. in Hort. Bog. sub n. 189).

Bulbophyllum aemulum Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 195; Orch. D. N. Guinea (1913), 753. — *B. dubium* J. J. S. in Bull. Dép. Agric. Ind. néerl. XXI (1909), 36; in N. Guinea VIII (1910), 139, t. XLVI, 54.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 833, 30 August 1914; "flowers white, centre of lip red").

Sect. Dialeipanthe.

Bulbophyllum sarcodanthum Schltr. Orch. D. N. Guinea (1913), 751.

Tab. LXXVIII, 120.

Pseudobulbi approximati, breves, ovoideo-globosi, c. 1.1 cm. longi, 1.2 cm. diam., 1-folii. Folium ellipticum, acuminatum, acutum, basi petiolato-contractum, supra in utraque canaliculae parte convexum, crasse carnosum, totum c. 5.75 cm. longum, petiolo canaliculato c. 0.8 cm. longo, 2.35 cm. latum. Inflorescentia e basi pseudobulborum, erecta, in specimine viso 1-flora, pedunculo c. 2.75 cm. longo, nonnullis vaginulis tubulosis acutis carinatis prominule nervosis furfuraceo-puncticulatis ad c. 0.95 cm. longis donato, rachide c. 0.8 cm. longa. Bractea vaginulis similis. Flos erectus, c. 1.8 cm. longus, sepalis utrinque furfuraceo-puncticulatis petalisque parallelis. Sepalum dorsale rhombeo-ovato-lanceolatum, apicem versus sensim angustatum, acutum, basi concavum, 5-nervium, nervis exterioribus basi furcatis, costa media dorso carinata ceteris basi prominulis, carnosulum, c. 1.7 cm. longum, 0.6 cm. latum. Sepala lateralia oblique ovato-lanceolata, apicem versus sensim angustata, acuta, concava, superne marginibus incurvis acutangule canaliculata, valde carnoso-carinata, 5(—7)-nervia, c. 1.9 cm. longa, 0.6 cm. lata. Petala incurvula, oblique lanceolato-linearia, sensim subsubulato-acuminata, acuta, concava, dorso praesertim versus basin obtusangule incrassata, 3-nervia, nervis exterioribus furcatis, carnosula, c. 0.95 cm. longa, 0.2 cm. lata. Labellum immobile, carnosum, leviter sigmoideum, ovato-lanceolatum, anguste obtusum, basi truncatum, $^2/_5$ partibus inferioribus supra concavum subtus convexum, $^3/_5$ partibus superioribus supra convexum subtus concavum, supra canalicula inconspicua in $^1/_3$ parte inferiore dilatata excepta omnino verrucis conicis in parte inferiore longitudinaliter superne transverse seriatis tectum, bene 1.4 cm. longum, 0.425 cm. latum. Gyuostemium cum ovario angulum obtusum faciens, longiusculum, c. 0.5 cm. longum, clinandrio valde obliquo, auriculis porrectis, triangulis, subacuminatis, acutis. Anthera cordata,

obtusa, tenuis, connectivo convexo-costato cum sulco tenui longitudinali, c. 0.27 cm. longa. Pollinia 4, anguste oblique lanceolata, compressa, extus convexa, intus leviter concava, c. 0.2 cm. longa. Stigma conspicuum, faciem inferiorem gynostemii magnam partem occupans, rotundato-quinquangulare, apice truncatum. Pes gynostemii abbreviatus. Ovarium oblique obconicum, crassum, 6-sulcatum, c. 0.5 cm. longum.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN nr. 36, 3 September 1914; "flowers green, dotted brown inside, lip dark green densely dotted brown").

Dr. R. SCHLECHTER placed this species in his section *Pachyanthe*; I see no reason to exclude it from the section *Dialeipanthe*.

It is evidently allied to *B. Crocodilus* J. J. S. and *B. teretilabre* J. J. S.

Description from a specimen preserved in alcohol.

Bulbophyllum mamberamense J. J. S. in Mededeel. Herb. Leiden 23 (1915), 15; in N. Guinea XII (1916), 418, t. CLVII, 295.

Dutch New-Guinea: In the northern part, Idenburg-river, c. 400 m., epiphytical in copse on sandstone with moss. (W. FEUILLETAU DE BRUYN n. 93, 14 September 1914). Mamberamo, near Prauwen-bivouac, 90 m., forest on hill, epiphytical. (H. J. LAM n. 1168, 12 September 1920).

Sect. Sestochilos (cum Pahudia, Brachyostele, Macrobulbon).

Bulbophyllum foetidum Schltr. Orch. D. Neu-Guinea (1913), 748.

var. **grandiflorum** J. J. S. n. var.

Tab. LXXVIII, 121.

Rhizoma validum, repens, ramosum, subteres, vaginis conspicuis amplectentibus tubulosis lateraliter compressis acute acuminatis mox exarescentibus et in fibras solutis sicco avellaneis superioribus accrescentibus tectum, vagina superiore pseudobulbum includente, ad c. 11 cm. longa, 3.25 cm. lata. Pseudobulbi c. 5.5 cm. dissiti, valde lateraliter compressi, oblongi, truncati, longitudinaliter costati, dilute virides, c. 3 cm. longi, 1.5 cm. lati, 1-folii. Folium erectum, oblongo-ellipticum, apice recurvum conduplicatum et acutum, basi sensim in petiolum acuminatum et semiconduplicatum, costa media supra angulato-canaliculata, subtus inferne obtuse superne acute carinata, coriaceum, nitide viride, subtus opacum et pallidius, c. 27—29.5 cm. longum, 12.5—10 cm. latum; petiolus validus, conduplicato-canaliculatus, dilute viridis, c. 4—5 cm. longus. Inflorescentia erecta, apice nutans et dense racemosa, pedunculo subtereti, sordide violaceo, dilute viridi-striolato, c. 26 cm. longo, 0.55 cm. diam., vaginulis c. 8 superne laxioribus et majoribus basi arcte tubulosis deinde ampliatis et antice fissis apice incurvis acutisque carinatis dilute viridibus inferne sordide violaceis ad c. 3.5 cm. longis donato, rachide angulata, sulcata, omnino dense verruculosa, basi sordide violacea, minute viridi-punctata, superne magis viridi, c. 3 cm. longa, cum floribus bene 10 cm. diam. Bracteae ovatae ad oblongo-ovato-triangulae, acute acuminatae, concavae, utrinque atrofusce punctatae, ad 1.15—1.5 cm. longae, 0.8—0.65 cm. latae, superiores minores. Flores c. 13, quaquaversi, patentissimi, magni, valde aperti, ingrati, odore *Tainiae paucifoliae* J. J. S., c. 7.75 cm. lati, sepalis petalisque patentissimis, apice recurvis, nitidis, sordide flavescenti-albis, tenuiter atroviolaceo-striatis, subsemipellucidis. Sepalum dorsale lanceolatum, medio fere recurvum, acutum, longius apiculatum, basi

truncata medio tantum affixum, basi utrinque rectangulatum, striis c. 11, c. 3.8 cm. longum, 0.9 cm. latum. Sepala lateralia a sepalo intermedio valde remote inserta, ad pedem gynostemii decurrentia, oblique lanceolata, apicem versus angustata, apice conduplicato-acuminata, acuta, basi valde obliqua, medio tantum affixa, angulis basilaribus obtusis, superne angulato-concava, striis c. 11, basi atropurpurea, c. 4 cm. longa, supra basin 1.2 cm. lata. Petala anguste lanceolata, acuminata, acuta, in setam crispam atropurpuream inexplanatam c. 0.25 cm. longam producta, superne undulata, leviter concava, apice canaliculata, striis c. 7, c. 3.3 cm. longa, 0.625 cm. lata. Labellum valde mobile, crasse carnosum, oblongum, apicem versus leviter angustatum, apice obtuse bilobum, supra convexum cum sulco longitudinali apicem non attingente, dense echinulato-papillosum, viscidum, subtus sulco longitudinali apicem versus altiore instructum, flavescenti-album, basi subtus excepta atropurpureo-punctatum, ingratum, c. 1.3 cm. longum, basi 0.7 cm. latum. Gynostemium insigne, curvulum, dorso convexum, infra apicem leviter constrictum, subtus concavum, ceraceum, nitidum, flavescenti-album, apice purpureo-punctatum, totum c. 1.1 cm. longum, apice late et breviter 3-lobulum, lobulo intermedio brevissimo, filamento filiformi, lobulis lateralibus majoribus extus convexis, auriculis elongatis, antheram longe superantibus, paulum divergentibus, undulatis, subulatis, acutis, purpureo-punctatis, c. 0.45 cm. longis, stelidiis basilaribus, porrectis, oblique oblongis, falcato-incurvis, obtusis, extus carinatis, carina in gynostemium decurrente, intus atropurpureo-maculatis, margine postico c. 0.3 cm. longis. Anthera cucullata, apice truncata, atropurpurea, basi pallida, c. 0.26 cm. lata. Pollinia 4, lateraliter compressa, oblique rotundato-triangula, extus convexa, flava, c. 0.18 cm. longa, glandula spuria molli. Stigma quadrangulum, basi dilatatum, lateribus atropurpureo-marginatum. Pes gynostemii cum ovario angulum acutum, cum gynostemio angulum subrectum faciens, incurvus, latus, quadrangulus, truncatus, intus inferne fascia longitudinali convexa, dorso convexus, nitidus, atropurpureus, c. 0.77 cm. longus, 0.5 cm. latus. Ovarium curvatum, 6-sulcatum, c. 0.9 cm. longum, cum pedicello crassiusculo tereti c. 1.45 cm. longo nitide atropurpureum.

Dutch New-Guinea: In the south-eastern part, on the way to Mt. Goliath. (A. C. DE KOCK, liv. pl. cult. in Hort. Bog. sub n. 175).

This is probably a variety of *B. foetidum* Schltr.

It differs from *B. foetidum* in the smaller more approximate much compressed pseudobulbs, the warty rachis, ovate bracts, much larger differently marked flowers, the lip covered with prominent points, much longer stelidia and auricles of the column.

The species belongs without any doubt to the section *Sestochilos* thus rendering SCHLECHTER's section *Brachyostele* superfluous. It is probable best placed near *B. lasianthum* Lndl.

The odour is disagreeable and much like that of *Tainia paucifolia* J. J. S., but by no means so penetrant as in *B. Pahudii* Rchb.f., *B. lasianthum* Lndl., etc.

Description from a living specimen.

Bulbophyllum graveolens J. J. S. in Bull. Jard. Bot. Buit. 2e sér. n. VIII (1912), 24. — *Cirrhopetalum robustum* Rolfe in Orch. Rev. I (1893), 195; Mast. in Gard. Chron. 1895, I, 771; in Bot. Mag. 3d ser. LII (1896), t. 7557. — *C. graveolens* Bail. in Bull. Dept. Agric. Queensl. XIII (1896), 33; Rolfe in Orch. Rev. IV (1896), 308; in Kew Bull. 1896, App. II, 48.

Rhizoma validum, repens, cylindricum, brevinode, c. 1.2 cm., sub pseudobulbo 1.9 cm. diam., initio vaginis tubulosis tectum. Pseudobulbi c. 1.5—2.8 cm. dissiti, cum rhizomate angulum

acutum facientes, oblique ovoidei, obtusi, 6—8-angulati, nitidi, dilute virides, c. 8—9 cm. alti, 4.2 cm. diam., 1-folii, initio nonnullis vaginis superne accrescentibus tubulosis breviter apiculatis carinatis pallide virescentibus cincti. Folium magnum, erectum, spathulato-ellipticum ad obovatum, obtusum, basin versus sensim petiolato-angustatum, costa media supra canaliculata subtus valde obtuse prominente, coriaceum, nitidum, dilute viride, subtus opacum pallide viride, c. 40—47 cm. longum, 13.5 cm. latum, parte petioliformi conduplicato-canaliculata, c. 8 cm. longa. Inflorescentiae e basi pseudobulborum, patentes, apice multiflorae, pedunculo valido, sectione transversa ovali, viridi, c. 18.5 cm. longo, 0.675 cm. lato, basi nonnullis vaginulis brevibus tubulosis, deinde vaginula e basi tubulosa superne inflata apertaque apiculata c. 2 cm. longa, infra medium vaginula patente concava basi non tubulosa donato, rachide non nutante, brevi, viridi, c. 1 cm. longa. Bracteae patentissimae, ovatae, obtusae, concavae, membranaceae, dilute virides, ad c. 2.3 cm. longae, 1.33 cm. latae, superiores minores. Flores c. 9—11 et plures, patentissimi, quaquaversi, subsecundi, magni, umbellam spuriam c. 14—16 cm. diam. formantes, foetidi, c. 7 cm. longi, 2.1—2.3 cm. lati, contusione odorem *Asperulae odoratae* exhalantes. Sepalum dorsale suberectum, incurvum, valde concavum, explanatum subovato-ovale, acutatum, 9-nervium, non foetidum, semipellucidum, dilute viride al flavo-viride, c. 2—3 cm. longum, 1.45 cm. latum. Sepala lateralia a dorsali subremote inserta, ad dimidium inferiorem pedis gynostemii decurrentia, supra basin horizontalem valde concavam arcte conduplicata valde et acute carinata et circiter usque ad apicem firmiter cohaerentia, laminam oblongam apicem versus non vel leviter angustatam planam vel plus minusve convexam apice brevissime obtuse bilobam ad acute bidentatam supra subrugulosam 2.1 cm. latam formantia, basi subtus fenestram anguste ellipticam supra fenestram majorem late ovatam facientia, rugulosa, nitidula, carnosula, dilute viridia ad flavo-viridia, supra basin versus leviter fusce suffusa, foetida, c. 4.9 cm. longa. Petala multo minora, porrecta, oblique ovalia, obtusa, abrupte apiculata, leviter convexa, 5-nervia, semipellucida, nitida, pallide viridi-flava, non foetida, c. 1.2 cm. longa, 0.73 cm. lata. Labellum valde mobile, valde recurvum, ambitu ovato-triangulum, cordatum, apicem versus angustatum, anguste obtusum, lobis basilaribus reversis verticalibus rotundatis, margine utroque latere prominente, supra convexum cum canalicula longitudinali conspicua fere usque ad apicem, canalicula excepta transverse rugosum, marginibus exceptis carnosum, nitidum, viscidum, foetidum, fusco-purpureum, subtus pallidum, inexplanatum c. 1.15 cm. longum, 0.725 cm. latum. Gynostemium cum ovario angulum obtusum faciens, breve, dorso convexum, subtus concavum, marginibus inferne rotundato-dilatatus, ceraceum, semipellucidum, nitidum, dilute flavum, subtus inconspicue purpureo-puncticulatum, c. 0.675 cm. longum, auriculis antheram superantibus, triangulis, falcatulis, acutiusculis, carnosis. Anthera alte cucullata, margine apicali recurvula, c. 0.27 cm. longa, connectivo valde incrassato verruculoso flavo, thecis parvulis flavescenti-albidis. Pollinia 4, inaequalia, a latere compressa, flava, exteriora triangula, extus convexa, interiora longiora, tenuiora, oblonga, c. 0.2 cm. longa, glandula spuria. Stigma quadrangulo-urceolatum, margine inferiore incrassationibus 2, margine superiore incrassatione 1 majore instructum. Pes gynostemii cum ovario angulum obtusum faciens, apice hamato-incurvus, dimidio superiore liber, linearis, apicem versus angustatus, apice paulo dilatatus leviter obtusangule excisus et dorso obtuse gibbosus, intus convexus, nitidus, pallide flavus, intus dense purpureo-punctatus, inexplanatus c. 1.35 cm. longus. Ovarium oblique obconicum, cylindrico-trigonum, 6-sulcatum, pallide viride, c. 0.7 cm. longum; pedicellus teres, c. 1.9 cm. longus.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN, liv. pl. cult. in Hort. Bog. sub n. 54).

B. graveolens is indeed a very curious plant. By ROLFE, BAILEY and SCHLECHTER it has been classed with *Cirrhopetalum*, of which it has undoubtedly the appearance, but is, I think, more satisfactorily placed in *Sestochilos*, with which it agrees in the shape of the lip, column and especially the pollinia. The shape of the lateral sepals is much the same as in *B. amplebracteatum* T. et B.

At any rate the plant yields another support to my opinion, that *Cirrhopetalum* should not be maintained as a genus next *Bulbophyllum*.

When bruised and drying the whole plant exhales a scent of cumarine. The noisome smell of the flowers is produced only by the lateral sepals and the lip.

The young flowers are light green, turning yellowish green when older.

The plate in CURTIS' Botanical Magazine is excellent.

Description from cultivated specimens.

Bulbophyllum macrobulbum J. J. S. in Bull. Dép. Agric. Ind. néerl. n. XXXIX (1910), 4; in Nova Guinea VIII (1912), 579, t. XCVIII B; Schltr. Orch. D. Neu-Guinea (1913), 760. — *B. Balfourianum* Hort. in Gard. Chr. LVIII, third ser. (1915), 56, fig. 18.

The plant mentioned in Gard. Chr. l. c. is nothing else than *B. macrobulbum* J. J. S.

Bulbophyllum inunctum J. J. S. in Ic. bog. III (1906), 37, t. CCXV.

Dutch New-Guinea: In the northern part. (Without locality, cult. in Hort. Bog. II M, c. 235).

The type specimen originated, according to the label in the Botanic Gardens, Buitenzorg, from Pontianak, in West-Borneo. The specimen cited above was imported much later from New-Guinea. It is a very difficult thing, especially in tropical botanical gardens, to keep the right labels and the corresponding plants together.

Sect. Hyalosema.

Bulbophyllum unitubum J. J. S. n. sp.

Tab. LXXVIII, 122.

Rhizoma elongatum, repens, radicans, teres, bene 0.3 cm. diam. Pseudobulbi c. 2—3 cm. distantes, cum rhizomate angulum acutum facientes, sublineares, apicem versus sensim attenuati, sectione transversa rhombei, antice longitudinaliter bicanaliculati, c. 5.3 cm. longi, 0.9 cm. lati, 1-folii. Folium breviter petiolatum, lanceolatum, apice recurvum (deficiente), basi in petiolum acuminatum, costa media supra sulcata subtus obtuse prominente, marginibus recurvulis acutisque, coriaceum, totum c. 12—14.5 cm. longum, petiolo 1.4—1.7 cm. longo, 2.85 cm. latum. Inflorescentiae e nodis rhizomatis, fasciculatae, erectae, 1-florae, pedunculo tereti, c. 13.7 cm. longo, dimidio inferiore vaginulis c. 5 tubulosis superioribus accrescentibus laxioribusque donato. Bractea arcte tubulosa, acuminata, acuta, c. 1.2 cm. longa. Flos magnus. Sepalum dorsale e basi oblongo-ovata concava in caudam elongatam marginibus incurvis contiguisque tubulosam productum, nervis 7 exterioribus ramosis intus prominentibus margineque dense puberulis, dorso papillosum, fere 9 cm. longum, parte lata c. 2.5 cm. longa, bene 1 cm. lata, cauda c. 0.2 cm. diam. Sepala lateralia ad pedem gynostemii brevem decurrentia, oblique linearia,

apicem versus sensim angustata, basi paululo dilatata, canaliculata, intus margineque breviter patentissime puberula, dorso papillosa, 4-nervia, c. 7 cm. longa, inferne 0.6 cm. lata. Petala parva, inter sepala inserta, porrecta, gynostemio adpressa, paululum in pedem gynostemii decurrentia, e basi oblique triangula convexa trinervia sensim tenuiter filiformi-producta globulo satis conspicuo echinulato absque pilis c. 0.1 cm. diam. terminata, c. 0.9 cm. longa, parte lata c. 0.4 cm. longa, 0.2 cm. lata. Labellum parvum, mobile, curvatum, carnosum, subtrilobum, callo triangulo convexo haud acute marginato ad basin, costis 2 longitudinalibus subinconspicuis in lobo medio marginibus parallelis decurrentibus et ante apicem obsolete confluentibus, fascia longitudinali lata pilorum rigidorum inferne brevium adpressorumque superne longiorum erecto-patentiumque inter costas usque in medium lobi intermedii, pilis superioribus apice apicem lobi fere attingentibus, supra omnino papillosum, subtus incrassatione convexa in basi triangulo-dilatata applanataque instructum, inexplanatum c. 0.5 cm. longum, ad lobos laterales 0.37 cm. latum, parte inferiore transverse quadrangula cum lobis lateralibus brevissimis incurvis rotundatis concavis papillosis, lobo intermedio recurvo, cum lobis lateralibus angulos obtusos faciente, subovali-oblongo cum marginibus lateralibus curvulis, apice rotundato-truncato, transverse ruguloso, inexplanato c. 0.375 cm. longo, 0.26 cm. lato. Gynostemium breve, crassum, praesertim apice incurvulum, lateraliter compressum, dorso convexum, subtus valde concavum cum marginibus a medio stigmatis usque in medium pedis gynostemii conspicue rotundato-dilatatis, costa longitudinali obtusa in excavatione, c. 0.4 cm. longum, clinandrio alte excavato, apice oblongo truncato sinibus altis oblongis ab auriculis aequilongis trapezoideis oblique truncatis angulo postico acutis angulo antico rotundatis medio dente acuto instructis separatis. Anthera cucullata, subglobosa, apice in appendicem magnam selliformem tranverse quadrangulam apice recurvulam subtus concavam producta, basi biloba, c. 0.175 cm. longa. Pollinia 4, valde inaequalia, exteriora semiovata, apice oblique truncata, extus convexa, intus plana, c. 0.12 cm. longa, interiora multo minora. Stigma alte excavatum, longitudinale, ovale. Pes gynostemii cum ovario angulum obtusum faciens, apice libero incurvulus utrinque rotundato-dilatatus truncatus, c. 0.5 cm. longus, apice 0.275 cm. latus. Ovarium teres, alte 6-sulcatum, c. 1.25 cm. longum; pedicellus teres, c. 2.5 cm. longus, c. 0.85 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 875, 14 September 1914; "flower yellow with red streaks").

A distinct species allied to *B. tricanaliferum* J. J. S., *B. elephantinum* J. J. S. etc. Description from herbarium and materials preserved in alcohol.

Bulbophyllum grandiflorum Bl. Rumphia IV (1848), 42, t. 195, f. 3; t. 199 B; etc.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac. (H. J. LAM, 1920, liv. pl. cult. in Hort. Bog. sub n. 299).

The flowers of this specimen cultivated in the Buitenzorg Gardens certainly are very large, the dorsal sepal when expanded being 16 cm. long and of 5.3 cm. broad, and the lateral sepals resp. 10 and 2.9 cm.

Bulbophyllum arfakianum Krzl. in Engl. Bot. Jahrb. XXXIV (1904), 250; Schltr. Orch. D. N. Guinea (1913), 742.

Tab. LXXIX, 123.

Rhizoma repens, elongatum, radicans, bene 0.3 cm. diam. Pseudobulbi longe distantes,

cum rhizomate angulos acutos facientes, ovoidei ad oblongo-ovoidei, quadranguli cum lateribus concavis, obtusi, c. 1.7—2 cm. longi, 0.85—0.95 cm. diam., 1-folii. Folium oblongum, obtusissimum, basi petiolato-contractum, costa media supra sulcata, lateribus in utraque sulci parte leviter convexum, carnosum, totum 7.5—9 cm. longum, petiolo 0.7—0.9 cm. longo, 2—2.75 cm. latum. Inflorescentiae e nodis rhizomatis, 1-florae, pedunculo c. 5.75—6 cm. longo, dimidio inferiore vaginulis c. 5 tubulosis apiculatis apicem versus leviter carinatis donato. Bractea vaginulis similis, c. 1.45 cm. longa. Flos majusculus, c. 4.5—5 cm. longus, sepalis parallelis. Sepalum dorsale cum ovario angulum obtusum faciens, incurvum, porrectum, valde concavum, superne conduplicatum, lateribus superne plus minusve contiguis, subovato-oblongum, acutum, basi breviter angustatum, apice dorso carinatum, utrinque papillosum, 7-nervium, reticulato-venosum, c. 4.5—5 cm. longum, 1.75—1.7 cm. latum. Sepala lateralia porrecta, sepalum dorsale superantia, breviter unguiculata, 6-nervia, reticulato-venosa, utrinque papillosa, ungue curvato, oblique subcuneato-oblongo extus convexo intus plano carnoso c. 0.55 cm. longo, abrupte in laminam oblique ovato-lanceolatam apicem versus sensim angustatam acutam dorso convexam ecarinatam dilatato, tota c. 4.5 cm. longa, 0.95 cm. lata. Petala parva, divergentia, apice recurva, convexa, oblique oblonga, apice angustata, obtusiuscula, glabra, 3-nervia, c. 0.5 cm. longa, 0.22 cm. lata. Labellum minimum, mobile, carnosum, curvatum, supra haud canaliculatum et margine utrinque prominente, apicem versus angustatum, subtus obtuse carinatum, longe patentissime ciliatum, ciliis apicem versus decrescentibus evanescentibusque, supra hirtello-puberulum, c. 0.3 cm. longum, 0.175 cm., cum ciliis 0.27 cm. latum. Gynostemium breve, crassum, lateraliter compressum, dorso convexum, subtus concavum, in utraque stigmatis parte obtusangule dilatatum, c. 0.3 cm. longum, clinandrio excavato, apice oblongo-quadrangulo truncato, auriculis triangulis vix denticulatis. Anthera alte cucullata, subglobosa, apice abrupte in rostrum breve bidentatum producta, connectivo convexo-incrassato, c. 0.08 cm. lata. Stigma longitudinale, parvum, oblongum. Pes gynostemii cum ovario angulum latissime obtusum faciens, incurvus, circiter $^2/_5$ partibus superioribus a sepalis lateralibus liber, oblongo-linearis, apice utrinque rotundato-dilatatus, apice truncatus, c. 0.45 cm. longus. Ovarium teres, 6-sulcatum, praesertim in sulcis minute furfuraceo-puncticulatum, c. 0.9 cm. longum; pedicellus teres, c. 1.75 cm. longus, c. 0.45 cm. supra basin articulatus.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 164, 22 October 1914; "flowers red"; n. 187, 8 November 1914; "flowers red and light yellow").

The description of *B. arfakianum* Krzl. tallies, as far as it goes, pretty well with this plant, but its incompleteness excludes reliability. Therefore I sent a copy of my sketch to Prof. Dr. F. KRÄNZLIN, who kindly informed me that in his opinion the plant in question is identical with his *B. arfakianum*, notwithstanding slight differences. The annotations about the colour of the flowers are from a native collector.

Description from herbarium and materials preserved in alcohol.

Sect. Stenochilus.

Bulbophyllum tollenoniferum J. J. S. in Fedde Rep. XI (1912), 139; in Nova Guinea XII (1916), 423, t. CLIX, 300.

The species has flowered in Buitenzorg. The flowers are transparent and have a similar odour as *B. macranthum* Lndl. The sepals are much incurved at the tip, very shining on both

surfaces and light ochreous with a greenish hue, especially towards the tip. Petals far less shining, pale ochreous, not tinged with green. Lip, column and column-foot light greenish yellow. Anther yellow.

Bulbophyllum Hahlianum Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 204. — *B. macranthum* Lndl. var. *albescens* J. J. S. Orch. Ambon (1905), 81.

Dutch New-Guinea: In the northern part, Otken-river, 26 m., epiphytical in forest. (A. C. Th. Thomsen n. 674, 6 April 1914). Mamberamo. (W. Feuilletau de Bruyn, nrs. 124 and 134, 3 October 1914).

Bulbophyllum Gjellerupii J. J. S. n. sp.

Tab. LXXIX, 124.

Rhizoma elongatum, repens, radicans, geniculatum, teres, dilute ligneum, bene 0.4 cm. diam., vaginis tubulosis pallidis internodia superantibus mox in fibras rigidulas patentes diu persistentes solutis tectum, vagina ultima maxima, pseudobulbum includente et longe superante, ample tubulosa, valde lateraliter compressa, abrupte breviter acute acuminata, pallida, c. 3.5 cm. longa, 1.6 cm. lata, internodiis c. 0.4—0.65 cm. longis. Pseudobulbi c. 2.5—3.5 cm. distantes, parvi, cum rhizomate angulum acutum facientes, oblique ovoidei, antice alte longitudinaliter canaliculati, virides, c. 1—1.1 cm. longi, 0.9—1 cm. diam., 1-folii. Folium breviter petiolatum, oblongo-ellipticum, apice breviter subacuto recurvum, basi in petiolum acuminatum, costa media supra sulcata subtus non prominente, crasse carnosum, dilutius viride, supra initio nitidum, deinde opacum, subtus opacum, c. 13.5—18 cm. longum, 6—6.3 cm. latum; petiolus canaliculatus, c. 1.25—1.5 cm. longus. Inflorescentiae e nodis rhizomatis, adscendentes, 1-florae, pedunculo c. 0.7—0.8 cm. longo, nonnullis vaginulis approximatis se amplectentibus tubulosis subulato-acuminatis pallide virescentibus sparse furfuraceo-puncticulatis superne accrescentibus ad c. 1 cm. longis donato. Flos majusculus, odoratus, sepalis petalisque suberectis, plus minusve conniventibus. Sepalum dorsale e basi ovata longe acuminatum, acutum, concavum, basi medio convexum, pallide virescenti-flavescens, $^1/_3$ parte inferiore margine et fascia mediana exceptis confluenter purpureo-maculatum, ceterum atropurpureo-maculato-marginatum, cauda canaliculata atropurpurea, intus nitidum, dorso nitidulum, c. 3.5—4 cm. longum, 0.9—0.95 cm. latum. Sepala lateralia approximata, sigmoidea, e basi oblique ovato-triangula longe canaliculato-acuminata, acuta, pallide virescenti-flavescentia, basi excepta atropurpureo-maculato-marginata, cauda atropurpurea, intus nitida, extus nitidula, c. 3.6—4 cm. longa, bene 1—1.1 cm. lata. Petala e basi breviter unguiculato-contracta intus convexa et longitudinaliter sulcata oblongo-elliptica concavaque, infra medium longe canaliculato-caudato-acuminata, acuta, $^2/_5$ partibus inferioribus basi excepta purpureo-maculata, basi utrinque nitidula, c. 2.7—3.25 cm. longa, 0.65—0.8 cm. lata. Labellum parvum, valde mobile, curvatum, lateraliter compressum, ligulatum, a latere visum falcato-triangulum, basi truncatum et postice fere ad medium altius canaliculatum, supra basin lobulis 2 parvis divergentibus truncato-obtusis dorso concavis donatum, canaliculae marginibus elevatis postice in lobulos decurrentibus, subtus sulco inconspicuo apicem versus evanescente instructum, glabrum, lobo intermedio producto, curvato, valde lateraliter compresso, supra viso lineari, acuto vel obtuso, supra convexo et basin versus leviter longitudinaliter sulcato, pallide virescens ad flavescenti-album, supra pallide viride ad citrinum,

supra parte superiore apice excepto sordide purpureo-notatum, c. 0.75 cm. longum, ad lobos laterales 0.325—0.4 cm., basi 0.17 cm. latum, lobo medio c. 0.1 cm. lato. Gynostemium rectum, lateraliter compressum, nitidum, flavescens, absque anthera c. 0.45 cm. longum, marginibus (stelidiis) obtusangule alato-dilatatis parallelis, clinandrio excavato, apice gynostemii (filamento) late triangulo, auriculis triangulis obtusis filamentum superantibus. Anthera cucullata, oblique conica, antice visa triangula et convexa, apice truncata, dilute flava, c. 0.15 cm. lata. Pollinia 4, lateraliter compressa, triangula, flava, exteriora extus convexa, c. 0.14 cm. longa, interiora minora et tenuiora. Stigma majusculum, quadrangulum. Pes gynostemii cum ovario angulum obtusum faciens, paulum supra medium obtusangule incurvus, apice liber, linearis, truncatus, convexus, pallide flavescens, inexpansus c. 0.6—0.7 cm. longus. Ovarium 6-sulcatum, c. 1 cm. longum, viride, minute furfuraceo-punctatum.

Dutch New-Guinea: In the north-eastern part, Hollandia. (K. GJELLERUP, liv. pl. cult. in Hort. Bog. sub n. 344).

Amongst the species of the section *Stenochilus* this is readily distinguished by the long acuminate sepals and petals.

When the flowers are fertilized the margins of the column bend inward as to cover the stigma.

Description from a living specimen.

Sect. Monosepalum.

Bulbophyllum muricatum J. J. S. in Bull. Dép. Agric. Ind. néerl. XLV (1911), 9; in N. Guinea VIII (1911), t. C, B; XII (1916), 374. — *Monosepalum muricatum* Schltr. Orch. D. N. Guinea (1913), 682.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., slope to the north, epiphytical. (H. J. LAM n. 1496, 4 October 1920; "roots greenish white, pseudobulbs dark green suffused with purple, leaf green above, shining purple beneath, peduncle violet, bract lighter, sepals base and border yellow with a little green, the rest violet with a fine greenish yellow underground, dotted blackish purple outside at base, petals white with violet below the appendages, the latter movable and finely dotted purple on a dirty white underground, lip white dotted violet, inside violet"). Same locality, foot of Doorman-top, 3250 m., nearly flat open and dry ground, terrestrial between ferns and grass. (H. J. LAM n. 1602, October 1920; "leaf dark green, suffused violet, underside, petiole and pseudobulbs dark violet, sepals inside yellow a little green, outside idem but speckled brownish violet, petals pale lilac finely speckled, lip speckled violet, column white"). Same locality, way to Doorman-top, 3200 m., moss-grown forest, terrestrial in moss-cushions. (H. J. LAM n. 1820, October 1920).

There is a certain amount of dissimilarity between the specimens from various places of origin. In the specimens collected by J. W. VAN NOUHUYS on the Hubrecht- and Wichmann-mountains e. g. the median appendage of the petals is longer than the lateral, in those gathered by SNELL on the Treub-mountains the thickest of the lateral appendages is the longest, whereas in the specimens originating from Doorman-top and collected by Dr. LAM the thickest appendage is the shortest.

In the specimens from Hubrecht- and Wichmann-mountains collected by J. W. VAN NOUHUYS and in those collected by Dr. K. GJELLERUP on Arfak-mountains the sepals measure 4.3—4.7 cm. in length, in those gathered by Dr. LAM on Doorman-top 5.9 cm., and amount

in SNELL's specimens even to 9 cm. Again in Dr. LAM's specimens the sepals are covered with minute warts, whereas in the other specimens mentioned they are rather muriculate.

The majority of the collected specimens bearing only one flower it is at this time impossible to decide whether more forms or species are to be distinguished.

Chitonanthera Schltr.

The genus *Chitonanthera* has been founded by the late Dr. R. SCHLECHTER on two Papuan Orchids: *Ch. angustifolia* Schltr. and *Ch. falcifolia* Schltr., to which the author added a third, somewhat dubious species: *Ch. miniata* Schltr. A successive note on this genus was published by the said author in „Die Orchideen von Deutsch-Neu-Guinea" in which the distinguishing characteristics as to the allied genera were supplimentarily defined.

Amongst these genera *Chitonanthera* is the only which possesses 4 pollinia. But as SCHLECHTER pointed out when creating the genus there are still other characters, especially in the column, which separate it from those.

When describing the Orchids collected in Dutch New-Guinea I came repeatedly across species similar in habit to *Octarrhena* and *Chitonanthera*. According to the number of pollinia found I distributed them over the said two genera. I was, however, not quite satisfied in doing so because part of the species showing 8 pollinia and thus placed in *Octarrhena* in other respects did not differ at all from *Chitonanthera*.

I have now taken up the subject afresh as far as the material at hand allowed me. And the result is that I am convinced that the genus *Chitonanthera* possesses always 8 pollinia, just as *Octarrhena* etc. These pollinia being dissimilar and partly very small, at least in some species, the smallest may have escaped attention.

In classifying the species in question after their floral characters, the number of pollinia being left out of regard, we get in fact at two quite natural groups. In case, however, it might prove that their exist really *Chitonanthera*'s with 4 pollinia, those with 8 enregistered here will have to constitute a separate genus.

In the original diagnosis of the genus *Chitonanthera* SCHLECHTER has described the column as „columna basi incrassata". This is not quite correct. The column is in front more or less ventricose and hollow like the pouch of a marsupial, and encloses the stigma. In a few species, viz. *Ch. cucullata* J. J. S., *Ch. suborbicularis* J. J. S., *Ch. obovata* J. J. S. and *Ch. calceiformis* J. J. S., it is extraordinarily developed and seems to form rather part of the labellum than of the column.

The species of *Octarrhena* which in my opinion should be removed to *Chitonanthera* are the following:

Chitonanthera Lorentzii J. J. S. comb. nov. — *Octarrhena Lorentzii* J. J. S. in Bull. Dép. Agric. Ind. néerl. XXXIX (1910), 18; in N. Guinea VIII (1911), 597, t. CVIII A.

Chitonanthera goliathensis J. J. S. comb. nov. — *Octarrhena goliathensis* J. J. S. in Bull. Jard. Bot. Buit. 2e sér. II (1911), 20; in N. Guinea XII (1913), 95, t. XXVI, 80.

Chitonanthera cucullifera J. J. S. comb. nov. — *Octarrhena cucullifera* J. J. S. in Mededeel. Herb. Leid. n. 23 (1913), 17; in N. Guinea XII (1916), 443, t. CLXXI, 319.

Chitonanthera Lorentzii J. J. S. supra.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3260 m., open slope with low shrubs, terrestrial. (H. J. LAM n. 1690, 22 October 1920; "leaves bright green, peduncle green or somewhat yellowish green, bracts brownish green, sepals orange, petals light orange, lip velvety brownish orange, column light orange, pollinia yellow, ovary yellowish orange").

Chitonanthera trigona J. J. S. n. sp.

Tab. LXXIX, 125.

Caules elongati, ramosi, stricti, praesertim ad basin radicantes, inconspicue flexuosi, tenues, subteretes, ad c. 28 cm. longi, internodiis c. 0.3—1 cm. longis, radicibus crassiusculis. Folia alternatim bifaria, patentia, equitantia, lateraliter compressa, sublanceolata, marginibus subparallelis, apice a dorso compressa, parte compressa marginata subtus declivi et cum folii pagina inferiore angulum obtusum faciente, breviter subacuta, utroque latere longitudinaliter sulcata, carnosa, c. 0.5—0.9 cm. longa, 0.15—0.175 cm. lata; vaginae tubulosae, internodia aequantes, apice oblique truncatae, sectione transversa rhombeae, utroque latere sulcis 2 longitudinalibus instructae, apice 0.175 cm. ad fere 0.2 cm. latae. Inflorescentiae axillares, subdense pluriflorae, pedunculo erecto, filiformi, c. 1.8—2.8 cm. longo, vaginulis 2 instructo, vaginula infima tubulosa apice producta, vaginula suprema bracteiformi, rachide recurva, trigona, facie florem versus spectante marginibus bractearum decurrentibus 2-costata, leviter quaquaverse flexuosa, verruculosa, c. 1—2 cm. longa, internodiis c. 0.2 cm. longis. Bracteae patentes, triangulae, acute acuminatae, irregulariter marginatae, conduplicato-concavae, dorso medio incrassatae, membranaceo-marginatae, dorso verruculosae, ad c. 0.26 cm. longae. Flores c. 7—13, triseriales, c. 0.45 cm. lati, sepalis patentissimis basi longitudine c. 0.07 cm. connatis. Sepalum dorsale abbreviato-ovatum, apice breviter contractum, obtusum, 1-nervium, c. 0.2 cm. longum, 0.23 cm. latum. Sepala lateralia oblique orbiculari-ovata, apice angustata, obtusa, 1-nervia, c. 0.2 cm. longa et lata. Petala minima, transverse subovato-ovalia, obtusissima, convexa, puberula, c. 0.05 cm. longa, 0.1 cm. lata. Labellum parvum, cum ovario angulum obtusum cum gynostemio angulum acutum faciens, late ovale, rotundatum, basi truncata utrinque lobulo brevissimo reverso obtuso instructum, vix convexum, papilloso-puberulum, 1-nervium, fere 0.2 cm. longum, 0.17 cm. latum. Gynostemium supra basin valde recurvum, a dorso compressum, subtus inferne convexum excavatumque cum sulco longitudinali, c. 0.16 cm. longum, excavationis stigma continentis apertura transverse fissiformi, clinandrio conspicuo excavato in lobulos 2 erectos latos falcato-incurvos subquadrangulos valde excavatos dorso convexos papillosos partito. Anthera cucullata, ambitu transverse ovalis, 6-lobulata, tenuiter membranacea, connectivo convexo suborbiculari, c. 0.05 cm. lata, in alabastro reniformis. Pollinia 8, 4 majora oblonga, 4 multo minora. Rostellum erectum, triangulum, acuminatum. Ovarium c. 0.1 cm. longum; pedicellus 0.13 cm. longus.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3250 m., open nearly flat country, terrestrial. (H. J. LAM n. 1608, 17 October 1920; "sheaths dull green, flowers dull red-orange, lip darker velvety, column somewhat bluish"). Same locality 3260 m., sunny open slope of ravine, between grass and ferns. (H. J. LAM n. 1738 (type), 24 October 1920; "sepals and petals light orange, lip velvety dark orange, ovary and fruit light orange").

In the shape of the flowers this species much resembles *Ch. Lorentzii* J. J. S. from which it is easily to be distinguished by the much shorter inflorescences and trilateral rachis.

Description from herbarium and materials preserved in alcohol.

Chitonanthera suborbicularis J. J. S. n. sp.

Tab. LXXX, 126.

Planta parva, erecta, basi dense radicans, caule simplici, c. 4—4.5 cm. longo, internodiis ad c. 0.35—0.55 cm. longis, superioribus brevioribus. Folia erecta, equitantia, lateraliter compressa, carnosa, supra visa linearia, a latere visa lanceolata, infra medium latissima (altissima), apice attenuata incurvula et leviter applanata cum costula longitudinali convexa ante apicem evanescente, obtusa, a latere visa acuta, $^2/_5$ partibus inferioribus costula longitudinali convexa instructa, supra ad basin sulco brevi longitudinali donata, c. 1.15—1.25 cm. longa, 0.22—0.25 cm. lata; vaginae tubulosae, utroque latere costa longitudinali convexa a lamina decurrente instructae. Inflorescentiae axillares, erectae, elongatae, laxe multiflorae, pedunculo c. 6.8—8 cm. longo, vaginulis c. 4 tubulosis donato, rachide nutante, flexuosa, bialata, ensiformi, c. 5.5 cm. longa, internodiis a basi apicem versus dilatatis, c. 0.35—0.5 cm. longis, c. 0.2 cm. latis. Bracteae alternatim bifariae, patentes, incurvulae, subconduplicato-concavae, triangulae, acuminatae, acutae, carinatae, marginibus in rachidis latera plana decurrentibus, ad c. 0.3 cm. longae, superiores minores. Flores ad c. 17, sepalis explanatis c. 0.4 cm. lati, 0.45 cm. longi. Sepalum dorsale abbreviato-ovatum, apice vix contractum, obtusum, 1-nervium, c. 0.225 cm. longum, 0.24 cm. latum. Sepala lateralia oblique orbiculari-ovata, apice vix acuminata, obtusa, 1-nervia, c. 0.2 cm. longa, 0.23—0.25 cm. lata. Petala minima, transverse subovato-ovalia, obtusissima, utroque latere valde convexa, puberula, bene 0.1 cm. longa, 0.1 cm. lata. Labellum parvum, ungue brevi insertum, subreniformi-orbiculare, obtusissimum, basi utrinque lobulo brevi reverso rotundato donatum, concavum, subtus convexum, papillosum, incrassationibus 2 longitudinalibus convexis sulco separatis intus usque $^1/_3$ partem infra apicem, 1-nervium, c. 0.15 cm. longum, 0.175 cm. latum. Gynostemium brevissimum, c. 0.075 cm. longum, basi abrupte contractum, antice excavatione transverse quadrangula stigma includente donatum, clinandrio in lobulos 2 erectos obtuse triangulos falcato-incurvulos ciliolatos antheram amplectentes partito. Anthera transverse quadrangula, plana, apice truncata, connectivo triangulo. Rostellum late triangulum. Ovarium (fecundatum) trigonum, cum pedicello brevissimo c. 0.375 cm. longum.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3200 m., open nearly flat dry country, terrestrial. (H. J. LAM n. 1607, 17 October 1920; "leaves dull green, peduncle and bracts pale yellow, flowers orange, sepals a little lighter, ovary orange").

In the elongated inflorescence and ensiform rachis the above species agrees with *Ch. Lorentzii* J. J. S. but the lip is nearly orbicular and provided with thickenings, and the column has a rather large pouch. It is, however, to be noted that the flowers at hand were fertilized.

Description from herbarium and materials preserved in alcohol.

Chitonanthera obovata J. J. S. n. sp.

Tab. LXXX, 127.

Planta parva, terrestris, erecta, caulibus basi ramosis, basi tantum radicantibus, flexuosis, tenuibus, c. 2.5—7.5 cm. longis, internodiis 0.3—0.75 cm. longis vel brevioribus. Folia alternatim bifaria, articulata, erecto-patentia, saepe leviter falcato-incurvula, equitantia, lateraliter compressa, subulata, circiter dimidio superiore leviter (in foliis minoribus minus conspicue) contracta, acuta, apice subtus declivia, saepe subapiculata, carnosa, c. 0.9—1.2 cm. longa, supra basin c. 0.14—0.2 cm. alta; vaginae tubulosae, internodia paululum superantes, lateraliter com-

pressae, basin versus angustatae, apice et loco insertionis oblique truncatae, carnosae, c. 0.175 ad bene 0.2 cm. latae. Inflorescentiae axillares, erectae, elongatae, laxe pauciflorae, pedunculo tenui, c. 3.6—5.8 cm. longo, vaginulis 2 tubulosis donato, rachide nutante, probabiliter sub fructificatione stricta, angulata, exalata, parce verruculosa, c. 1—2.8 cm. longa, internodiis ad c. 0.8 cm. longis, superioribus minoribus. Bracteae triangulae, acutae, concavae, ad c. 0.3 cm. longae. Flores c. 3—8, parvuli, sepalis basi brevissime connatis. Sepalum dorsale orbiculari-ovatum, obtusum, 1-nervium, c. 0.17 cm. longum, bene 0.15 cm. latum. Sepala lateralia oblique subovata, 1-nervia, apice vix contracta, c. 0.18 cm. longa, 0.15 cm. lata. Petala parva, obovata, obtusa, concava, puberula, 1-nervia, c. 0.1 cm. longa, 0.05—0.06 cm. lata. Labellum ad basin calceoli gynostemii insertum, parvum, late oblongum, apice rotundatum, basi subtruncata breviter contractum, papillosum, concavum, subtus convexum, 1-nervium, totum c. 0.15 cm. longum, 0.07 cm. latum. Gynostemium humile, cum ovario fecundato angulum obtusum faciens, c. 0.05 cm. longum, antice in calceolum conspicuum porrectum ovalem concavum antice altius carnosum antice non in callum incrassatum omnino papillosum ciliolatum productum, cum calceolo 0.15 cm. longum, clinandrio in lobos 2 erectos oblique falcato-triangulos obtusos concavos ciliolatos antheram amplectentes partito. Anthera cucullata, transversa, basi 4-lobulata, apice late truncata, c. 0.04 cm. lata. Pollinia 8, 4 majora, 4 minora. Rostellum subulatum. Ovarium (fecundatum) obconicum, c. 0.2 cm. longum; pedicellus 0.07 cm. longus. Capsula brevissime pedicellata, flore clauso coronata, oblongo-obovoidea, obtusa, basi acuta, c. 0.325 cm. longa.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3200 m., open nearly flat dry country, terrestrial. (H. J. LAM n. 1607a (type), mixed with n. 1607, 17 October 1920). Same locality, 3260 m. sunny open slope of ravine. (H. J. LAM n. 1738a, mixed with n. 1738, 14 October 1920).

With *Ch. cucullifera* J. J. S. and *Ch. calceiformis* J. J. S. this forms a small group with the pouch of the column strongly developed and pointing forward, simulating the hypochylium of the lip.

I found only a few specimens mixed together with *Ch. suborbicularis* J. J. S. and *Ch. trigona* J. J. S. It makes the impression as in n. 1738a the flowers are cleistogamous.

Description from herbarium only.

Chitonanthera calceiformis J. J. S. n. sp.

Tab. LXXXI, 128.

Caules elongati, ramosi, stricti, radicantes etiam inter folia, leviter flexuosi, tenues, ad c. 40 cm. longi, internodiis ad c. 0.75 cm. longis, superioribus decrescentibus. Folia articulata, alternatim bifaria, patentia ad erecto-patentia, lateraliter compressa, plus minusve falcatulo-incurva, carnosa, oblique oblongo-ovata, inferiora angustiora lanceolataque, acuta, lateribus convexa, punctata, c. 0.35—0.8 cm. longa, 0.24—0.2 cm. lata; vaginae tubulosae, lateraliter compressae, apice obliquae, carnosae, punctatae, c. 0.275 cm. latae. Inflorescentiae axillares, laxe pauciflorae, pedunculo filiformi, superne verruculoso, c. 0.75—3.5 cm. longo, vaginulis c. 3—4 tubulosis donato, rachide nutante, trigona, c. 1.3—1.9 cm. longa. Bracteae adpressae, e basi angulato-orbiculari longe anguste triangulo-acuminatae, acutae, concavae, ad c. 0.375 cm. longae, 0.24 cm. latae. Flores c. 4—9, quaquaversi, in genere majusculi, c. 0.55 cm. diam., sepalis patentissimis, basi breviter connatis, convexis, 1-nerviis, explanatis una c. 0.64 cm. latis,

0.725 cm. longis. Sepalum dorsale late orbiculari-ovatum, breviter obtuse acuminatum, medio c. 0.375 cm. longum, 0.4 cm. latum, longitudine 0.1 cm. sepalis lateralibus adnatum. Sepala lateralia suboblique orbiculari-ovata, apice angustata, obtusiuscula, c. 0.34 cm. longa, 0.35 cm. lata. Petala minima, gynostemio adpressa, porrecta, oblique ovalia, obtusissima, minute papilloso-ciliolata, in utraque canaliculae longitudinalis parte convexa, bene 0.1 cm. longa, fere 0.1 cm. lata. Labellum calceoli gynostemii subtus adnatum, parvum, simplex, decurvulum, apice incurvulum, ovato-triangulum ad ovatum, obtusum, leviter concavum, supra papillosum, c. 0.17 cm. longum, 0.13 cm. latum. Gynostemium brevissimum, transversum, c. 0.1 cm. longum, 0.13 cm. latum, antice in calceolum magnum porrectum gynostemium multo superantem oblongo-quadrangulum valde excavatum cum marginibus erectis antice transverse truncato-connatis inferne obtusangulis superne irregulariter marginatis subtus convexum carnosum apice in callum transverse quadrangulum convexum leviter longitudinaliter costulatum intus declive verruculoso-rugulosumque productum papillosum c. 0.24 cm. longum 0.22 cm. latum stigma continens auctum, clinandrio excavato in lobulos 2 oblique quadrangulos subfalcatulo-incurvos apice irregulariter marginatos ciliolatosque partibus proximis tenues partito. Anthera inter lobos clinandrii inserta, transverse cucullata, utrinque obtuse subradiato-trilobulata, connectivo oblique conico apice porrecto, c. 0.06 cm. lata. Rostellum anguste triangulum, dentiforme. Ovarium obconicum, trigonum cum costula in lateribus, crassiusculum, c. 0.17 cm. longum; pedicellus angulatus, c. 0.15 cm. longus.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3200 m., on a somewhat wet spot on open slope, terrestrial. (H. J. LAM n. 1685, 21 October 1920; "more or less creeping, young leaves light green, afterwards dark green, peduncle and bracts yellow or a little green, sepals and petals rather dark yellow, lip yellow at base with a dirty purple tip and a velvety brown appendix, column yellow, ovary and fruit brownish yellow"). Same locality, 3260 m., nearly flat open country with a few trees, epiphytical. (H. J. LAM n. 2011, 15 November 1920, "roots brownish white, leaves light green, peduncle and bracts yellow, sepals dark yellow, petals yellow, lip velvety dark orange, column yellow").

Amongst the allied species this has the largest column pouch. The anther is remarkable for being rather deeply lobed. The number of pollinia could not be stated as there were no flowerbuds with the material preserved in alcohol.

Description from herbarium and materials preserved in alcohol.

Octarrhena Thw.

Octarrhena tenuis J. J. S. in Fedde Rep. XII (1913), 25; etc.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3250 m., open nearly flat dry country, terrestrial, common. (H. J. LAM, n. 1609, 17 October 1920). Doorman-top, 3520 m., open top between stones, terrestrial, common. (H. J. LAM, n. 1665, 18 October 1920; "roots pale brown, stem and leaves greenish yellow or yellow, flowers light green when young, afterwards yellow or orange-yellow, spur and ovary lighter").

Octarrhena? arfakensis J. J. S. in Fedde Rep. XII (1913), 25; in Nova Guinea XII (1916), 441, t. CLXIX, 317.

Dutch New-Guinea: In the northern part, mountain-ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 37, July—August 1914).

Only one specimen was collected the flowers of which were fertilized.

Octarrhena cymbiformis J. J. S. n. sp.

Tab. LXXXI, 129.

Caulis flexuosus, c. 4 cm. longus, basi radicans, internodiis c. 0.5—0.6 cm. longis. Folia erecto-patentia ad patentia, articulata, equitantia, lateraliter compressa, partim falcatulo-recurvula, linearia, obtusa, carnosa, c. 1.8—2.1 cm. longa, 0.175—0.2 cm. lata (alta); vaginae tubulosae, lateraliter compressae, sectione transversa ellipticae, internodia superantes, apice truncatae, carnosae, c. 0.23—0.3 cm. latae. Inflorescentiae vaginam dorso ad basin perforantes, omnino furfuraceo-puncticulatae, folia superantes, cum floribus c. 0.575 cm. diam., pedunculo c. 2.5 cm. longo, vaginulis numerosis adpressis e basi lata subulato-acuminatis donato, rachide obtuse angulata, sulcata, c. 2.1 cm. longa. Bracteae adpressae, e basi ovata concava irregulariter marginata longe angustissime lineari-acuminatae, fere 0.2 cm. longae. Flores quaquaversi, patentissimi recurvulique, fere 0.3 cm. longi, sepalis dorso furfuraceo-puncticulatis. Sepalum dorsale recurvum, triangulum, acutum, subconduplicato-carinato-apiculatum, 1-nervium, c. 0.16 cm. longum, fere 0.1 cm. latum. Sepala lateralia porrecta, divergentia, oblique subovata, acuta, lateraliter compresso-apiculata, carinata, concava, 1-nervia, c. 0.175 cm. longa, 0.125 cm. lata. Petala porrecta, gynostemio adpressa, oblique ovato-triangula, subacuminata, acuta, 1-nervia, bene 0.1 cm. longa, 0.075 cm. lata. Labellum parvum, inexplanatum gynostemio brevius, cum ovario angulum obtusum faciens, valde incurvum, concavum, dorso convexum, anguste oblongum, acutum ad breviter obtuse apiculatum, 3-nervium, incrassationibus 2 inaequalibus in dimidio inferiore, explanatum c. 0.16 cm. longum, bene 0.05 cm. latum. Gynostemium haud valde breve, latum, basi paululum attenuatum, c. 0.1 cm. longum, clinandrio alte excavato declivi sinibus obtusis leviter 3-lobulum, lobulo intermedio (postico) brevi lato breviter obtuse incurvule apiculato. Anthera cucullata, cordato-triangula, lobulis basilaribus retusis, apicem versus angustata, anguste obtusa, c. 0.05 cm. lata. Rostellum porrectum, acute bidentatum. Stigma transversum, subsemilunatum. Ovarium crassum, obconicum, c. 0.13 cm. longum; pedicellus brevissimus, c. 0.07 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1450 m., nearly flat swampy moss-grown forest, epiphytical. (H. J. LAM n. 1582, 12 October 1920; "roots yellowish white, leaves light green, peduncle greenish yellow with brown bracts, flowers yellow, column white").

I have kept this apart from *O. arfakensis* J. J. S. on account of the considerably narrower leaves and sheats. As for the floral characters both species are very similar although slight differences may be traced, e. g. in the sepals, callosities of the lip, anther. It is, however, to be noted that the material at hand is very poor and consists of a single small specimen preserved in alcohol. Both species should be compared with *O. angraecoides* Schltr.

Phreatia Lndl.

Sect. Caulophreatia.

Phreatia semiorbicularis J. J. S. in Bull. Dép. Agric. Ind. néerl. XXXIX (1910), 19; in Nova Guinea VIII (1911), 599, t. CIX A; Krzl. in Pflanzenr. IV. 50. II. B. 23 (1911), 12.

Dutch New-Guinea: In the southern part, Treub-mountains, 2400 m. (A. PULLE n. 1114, February 1913).

Sect. Rhizophyllum.

Phreatia iridifolia Schltr. Orch. D. N. Guinea (1913), 930.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26 m., epiphytical in forest. (A. C. Th. THOMSEN n. 627, 1 April 1914; "flowers white"; H. J. LAM, liv. pl. cult. in Hort. Bog. sub n. 197).

To SCHLECHTER's description I can add that the leaves are channelled above. The lip is provided at the base with 2 orbicular glands, rather distinctly three-lobed in THOMSEN n. 627, hardly so in the specimen cultivated in the Buitenzorg Gardens.

Phreatia moluccana J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 35.

Dutch New-Guinea: In the northern part, without locality. (K. GJELLERUP, liv. pl. cult. in Hort. Bog. sub nrs. 53 and 103).

Phreatia quinquelobulata J. J. S. n. sp.

Tab. LXXXI, 130.

Parvula. Caulis brevis, c. 5-foliatus. Folia anguste linearia, conduplicata (normaliter?), obtusa, inaequaliter bilobula cum lobulo brevi obtuso interposito, basin versus angustata, tenuia, ad c. 7 cm. longa, 0.35 cm. lata; vaginae tubulosae, basin versus dilatatae et se amplectentes, superne hiantes undulataeque, basi laminae latiores, prominenter nervosae, c. 0.7 cm. longae. Inflorescentiae axillares, foliis multo breviores, sublaxe multiflorae, pedunculo c. 1 cm. longo, nonnullis vaginulis tubulosis acuminatis carinatis donato, rachide angulata, c. 1.5—2.3 cm. longa. Bracteae persistentes, patentes, oblongae, acutae, concavae cum marginibus incurvis, ad c. 0.2 cm. longae. Flores minimi. Sepalum dorsale triangulum, obtusiusculum, 1-nervium, c. 0.075 cm. longum, 0.06 cm. latum. Sepala lateralia oblique triangula, acutiuscula, 1-nervia, c. 0.1 cm. longa, 0.075 cm. lata. Petala oblique oblongo-subovalia, obtusa, 1-nervia, c. 0.075 cm. longa, fere 0.05 cm. lata. Labellum ex ungue concavo transverse angulato-subovali glandula conspicua transversa (2 confluentibus?) instructo superne leviter constricto in laminam ambitu suborbicularem breviter obtuse quinquelobulatam basi late cuneatam ut videtur glabram dilatatum, 3-nervium, totum c. 0.08 cm. longum, ungue c. 0.03 cm. lato, lamina c. 0.05 cm. longa, 0.06 cm. lata. Gynostemium brevissimum, apice truncatum, vix 0.05 cm. longum, clinandrio concavo, angulato-orbiculari, pede brevissimo. Anthera cucullata, transverse quadrangula, apice breviter obtusangula, connectivo incrassato, c. 0.04 cm. lata. Pollinia 8. Stigma transverse fissuriforme. Ovarium obovoideo-fusiforme, fere 0.1 cm. longum; pedicellus multo tenuior, 0.03 cm. longus.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 18, without notes).

According to the description this seems to be nearest to *Ph. bismarkiensis* Schltr., with which it agrees in the shape of the lip. It has, however, longer and narrower leaves, much shorter inflorescences, much smaller flowers.

Description from a single specimen preserved in alcohol which was not in a very good state.

Phreatia petiolata Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 190; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 156, 19 October 1914).

Sect. Bulbophreatia.

Phreatia bicostata J. J. S. in Bull. Dép. Agric. Ind. néerl. XIX (1908), 31; etc.

Dutch New-Guinea: In the southern part, Hellwig-mountains, 1800 m. (A. PULLE n. 728, December 1912).

Phreatia nutans J. J. S. n. sp.

Tab. LXXXII, 131.

Rhizoma validum, repens, teres, c. 0.2—0.25 cm. diam., initio vaginis tubulosis tectum. Pseudobulbi c. 0.25—1.2 cm. distantes, parvi, oblique depresse ovoidei, c. 0.4—0.5 cm. alti, 0.45—0.55 cm. diam., bifolii. Folia erecta, recurva, lanceolata, obtusa, subaequaliter triangulo-bidentata cum apiculo conico incurvo interposito, basi angustata conduplicataque, supra in utraque canaliculae parte convexa, costa media subtus prominente, carnosula, c. 3.75 cm. longa, 0.8 cm. lata, folium infimum pseudobulbo adnatum, majus; vagina petioliformis, lateraliter compressa, supra versus apicem sulcata, c. 1 cm. longa. Inflorescentiae e basi pseudobulborum, erectae, elongatae, dense multiflorae, cylindricae, pedunculo c. 18.5—21 cm. longo, vaginulis c. 6—10 tubulosis acuminatis et superne 5—10 bracteiformibus donato, rachide arcte nutante, alte multisulcata, glabra, c. 4—5 cm. longa, cum floribus c. 1 cm. diam. Bracteae lanceolato-triangulae, acutae, concavae, 1-nerviae, ad c. 0.5 cm. longae, superiores minores. Flores in genere inter majores, quaquaversi, c. 0.4 cm. lati. Sepalum dorsale revolutum, oblongo-triangulum, subacutum, 1-nervium, c. 0.275 cm. longum, 0.14 cm. latum. Sepala lateralia cum pede gynostemii mentum breve reversum late rotundatum antice valde hians formantia, divergentia, angulum acutum facientia, oblique ovata, superne falcatula, vix acuminata, acuta, nervo 1 dorso prominente, fere 0.3 cm., margine antico 0.35 cm. longa, 0.18 cm. lata. Petala porrecta, divergentia, sepalis lateralibus parallela, oblique ovato-oblonga, apice canaliculata, subacuta, minute erosula, 1-nervia, c. 0.225 cm. longa, 0.1 cm. lata. Labellum cum pede gyuostemii angulum obtusum faciens, concavum, ex ungue brevissimo aequilateraliter trapeziformi basi utrinque in denticulum exeunte eglanduloso abrupte in laminam ambitu semiorbicularem aequilateraliter trapeziformem apice in lobulum brevissimum obtusum productam basi truncatam cum angulis basilaribus obtusis marginibus lateralibus minute crenulatam dilatatum, glabrum, 3-nervium, explanatum c. 0.2 cm. longum, ungue 0.05 cm. longo, basi 0.1 cm., apice 0.075 cm. lato, lamina 0.15 cm. longa, 0.24 cm. lata. Gynostemium brevissimum, dorso convexum, c. 0.1 cm. longum, clinandrio cucullato, suborbiculari, saepe uno latere vel interdum utrinque exciso. Anthera cucullata, quinquangularis, apice subrectangule acuta, basi breviter 4-lobulata, connectivo late convexo-tricostulato, c. 0.07 cm. lata. Pollinia 8, suborbicularia. Rostellum erectum, minusculum, 2-dentatum. Stigma transverse fissuriforme. Pes gynostemii cum ovario gynostemioque angulos rectos faciens, brevis, rectus, quadrangulus, versus apicem dilatatus, truncatus, ab ungue labelli bene distinctus, c. 0.05 cm. longus. Ovarium 6-costato-angulatum, c. 0.25 cm. longum; pedicellus tenuior, c. 0.1 cm. longus.

Dutch New-Guinea: In the northern part, foot of Doorman-top, 3200 m., open slope on a stone. (H. J. LAM n. 1687, 21 October 1920; "leaves bright green, shining above dead beneath, peduncle and bracts light green or yellowish green, buds light green afterwards bright yellow, white when opening, ovary and fruit green").

In the shape of the flowers this resembles *Ph. bicostata* J. J. S., in habit, however, it is very distinct, especially in the long erect peduncle and the rachis abruptly bent down.

Description from herbarium and materials preserved in alcohol.

Phreatia renilabris J. J. S. n. sp.

Tab. LXXXII, 132.

Rhizoma repens, teres, initio vaginis tectum. Pseudobulbi approximati, ad 0.25—0.55 cm. distantes, depresse globosi, longitudinaliter paucisulcati, c. 0.2—0.25 cm. alti, 0.25—0.3 cm. diam., 2-foliati. Folia erecta, lanceolata, inaequaliter bidentata cum mucrone longiore conico interposito, basi sensim angustata conduplicataque, supra canaliculata cum lateribus convexis, carnosula, c. 1.25—3.1 cm. longa, 0.225—0.5 cm. lata; vaginae petioliformes, c. 0.7 cm. longae. Inflorescentiae e basi pseudobulborum, subdense multiflorae, pedunculo tenui, c. 7.5—10 cm. longo, vaginulis c. 4—6 tubulosis acutis donato, rachide valde c. 4-costata, furfuracea, c. 2.5—3.5 cm. longa. Bracteae e basi dilatata acuminatae, subirregulariter marginatae, ad c. 0.35 cm. longae, superiores minores. Flores quaquaversi, c. 0.34 cm. longi. Sepalum dorsale reflexum, oblongo-ovato-triangulum, acutiusculum, apiculatum, convexum, 1-nervium, c. 0.23 cm. longum, bene 0.1 cm. latum. Sepala lateralia cum pede gynostemii mentum breve reversum latum obtusangulum antice valde hians formantia, oblique porrecta, divergentia, angulum acutum facientia, oblique ovato-triangula, subacuta, basi antice concava, 1-nervia, c. 0.225 cm., margine antico 0.275 cm. longa, 0.175 cm. lata. Petala divergentia, sepalis parallela, oblique oblonga, basi cuneata, supra basin paululum obtusangule dilatata, apicem versus leviter angustata, obtusa, vix falcatula, 1-nervia, c. 0.175 cm. longa, supra basin 0.08 cm. lata. Labellum cum pede gynostemii angulum rectum faciens, porrectum, gynostemium bene superans, apice recurvulum, concavum cum lateribus divergentibus convexis undulatis, glabrum, 3-nervium, nervis exterioribus in ungue conspicue incrassatis, explanatum ex ungue aequilateraliter subtrapeziformi utroque latere rotundato sinibus falcato-triangulis a lamina separato c. 0.05 cm. longo 0.075 cm. lato abrupte in laminam conspicuam latam angulato-reniformem lobulis basilaribus obtusam apice late retusam late bilobulatam minute crenulatam c. 0.125 cm. cum lobulis basilaribus 0.15 cm. longam bene 0.2 cm. latam dilatatum, totum c. 0.18 cm. longum. Gynostemium breve, crassum, dorso valde convexum cum sulco longitudinali, c. 0.1 cm. longum, clinandrio oblique truncato, alte cucullato, margine postico obtuse apiculato. Anthera cucullata, cordato-quinquangularis, subquinquelobulata, apice obtusa, lobulis basilaribus conspicuis rotundatis retusis, c. 0.05 cm. lata. Rostellum faciem inferiorem gynostemii continuum, subulato-bidentatum. Stigma transverse fissuriforme. Pes gynostemii basi reversus, in $^2/_5$ partibus supra basin obtusangule incurvus et a sepalis lateralibus liber, late linearis, c. 0.075 cm. longus. Ovarium 6-costato-angulatum, parce furfuraceum, c. 0.2 cm. longum, cum pedicello tenuiore angulato subglabro 0.17 cm. longo clavatum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 2550 m., epiphytical in moss-grown forest. (H. J. LAM n. 1953, 11 November 1920; "pseudobulbs light green, leaves rather dark green and shining above, light green beneath, flowers white, base of lip greenish white, ovary light green or greenish white, pedicel white").

Comparable with *Ph. chionantha* Schltr. but with smaller pseudobulbs, shorter leaves,

larger flowers, oblong petals, the lip retuse at the tip and provided with two conspicuous thickenings on the claw, and a distinctly quinquangular anther.

Description from materials preserved in alcohol.

Phreatia pisifera J. J. S. in Fedde Rep. XII (1913), 26; in N. Guinea XII (1916), 435, t. CLXVI, 311.

Dutch New-Guinea: In the northern part near Doorman-river, 200 m., epiphytical in forest on bank. (H. J. LAM nrs. 1308 and 1393, 23—24 September 1920).

Phreatia grandiflora J. J. S. in Fedde Rep. XII (1913), 26; in N. Guinea XII (1916), 436, t. CLXVII, 312.

Dutch New-Guinea: In the northern part, mountain-ridge c. 70 km. north of Carstensz-mountains, bivouac C, 1800 m. (L. A. C. M. DOORMAN n. 38, July—August 1914).

Thelasis Bl.

Sect. Hemithelasis.

Thelasis phreatioides J. J. S. in Bull. Dép. Agric. Ind. néerl. n. XLV (1911), 11; etc.

Pollinia 8, in seriebus 2 superimposotis, subrotunda, compressa, verticalia, flavescentia, cum stipite lineari vix spathulato flavescenti et glandula anguste oblonga c. 0.13 cm. longa.

The flowers are white turning light yellow when older. They have the pecular odour of *Dendrobium crumenatum* Sw. mixed with that of lemon.

Sect. Oxyanthera.

Thelasis carinata Bl. Bijdr. (1825), 386; etc.

forma **semipelorica.**

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN 1914, AJOEB, liv. pl. cult. in Hort. Bog. sub n. 45). Island Koeroedoe, in forest. (R. F. JANOWSKY n. 636, October 1913; KORNASI, liv. pl. cult. in Hort. Bog. sub n. 50).

The flowers of these cultivated specimens are all of them more or less peloric.

I think that SCHLECHTER's *Oxyanthera papuana* is the same species. The flowers are not larger than in the common form, the ovary is not more acutely trilateral but the anther and rostellum are shorter.

At this time I see no reason for separating it from *Th. carinata* Bl. as no normal flowers could be studied.

Acriopsis Reinw.

Acriopsis javanica Reinw. Fl. Lit. II, 4; etc.

var. **Nelsoniana** J. J. S. nov. comb. — *A. Nelsoniana* Bail. in Queensl. Agric. Journ. III (1898), 160; etc.

Dutch New-Guinea: In the northern part, Idenburg-river. (W. FEUILLETAU DE BRUYN n. 14, without date). Mamberamo, Meervlakte near Prauwen-bivouac, 90 m., forest. (H. J. LAM n. 1123, September 1920).

Schouten Islands: Biak, north-coast, Korim, full sun. (W. FEUILLETAU DE BRUYN n. 438, 10 October 1915).

Thrixspermum Lour.

Thrixspermum validum J. J. S. in Bull. Dép. Agric. Ind. néerl. XIX (1908), 37; in N. Guinea VIII (1909), 120, t. XLI, 136.

Dutch New-Guinea: In the northern part, Mamberamo, plain to the north of Van Rees-mountains. (W. FEUILLETAU DE BRUYN n. 237, 9 December 1914). Same locality, near Prauwen-bivouac, 110 m., forest on hill, epiphytical. (H. J. LAM n. 1009, 1 September 1920; 90 m., n. 1121, 9 September 1920).

Sarcochilus R. Br.

Sarcochilus Moorei Schltr. Orch. D. N. Guinea (1913), 967; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN n. 680, without date; n. 832, 30 August 1914; n. 885, 22 September 1914; W. FEUILLETAU DE BRUYN n. 132, 5 October 1914). Same locality, Meervlakte, 40 m. (W. FEUILLETAU DE BRUYN n. 1, without date). Same locality, near Pionier-bivouac, 10 m., forest. (H. J. LAM n. 739, September 1920). Same locality, near Prauwen-bivouac, 90 m., forest on hill. (H. J. LAM n. 1153, September 1920).

Sarcochilus singularis J. J. S. in Fedde Rep. XII (1913), 27; in N. Guinea XII (1916), 457, t. CLXXVIII, 331. — *Chamaeanthus singularis* J. J. S. in Bull. Jard. Bot. Buit. 2e sér. III (1912), 25.

Schouten Islands: Biak, north coast, Warsa, grows in the shade. (W. FEUILLETAU DE BRUYN n. 297, 12 August 1915).

Vandopsis Pfitz.

Vandopsis curvata J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 73; in N. Guinea XII (1916), 460, t. CLXXIX, 332.

Schouten Islands; Biak, north-coast, Warsa, growing in the shade along the beach. (W. FEUILLETAU DE BRUYN n. 299, 12 August 1915).

Vandopsis pantherina J. J. S. n. sp.

Tab. LXXXII, 133.

Caulis validus, scandens, subteres, viridis, 1.6 m. superans, 1.2 cm. diam., ad nodos radices 1—2 elongatas patentes emittens, internodiis c. 4—5 cm. longis. Folia patentissima, loriformia, recurvula, apice lata, breviter oblique rotundato-biloba, obtusangule canaliculata, margine acuta et recurvula, costa media supra sulcata, crasse carnosa-coriacea, nitidule viridia, c. 18—24 cm. longa, 4.7—5 cm. lata; vaginae tubulosae, internodia paulum superantes, sectione transversa subovales, opacae, virides, c. 1.7 cm. latae. Inflorescentiae vaginam dorso perforantes, patentissimae, paniculatae, pyramidales, laxe multiflorae, c. 36 cm. longae, pedunculo valido, tereti, opaco-viridi, minute atrofurfuraceo, c. 7 cm. longo, vaginulis c. 3 brevibus tubulosis obtusis donato, ramulis c. 7, patentibus, vaginulis majusculis superne in bracteas vergentibus suffultis, ramulo infimo longissimo, parcissime ramoso, c. 15 cm. longo, rachide angulata, costata, dense minute atrofurfuracea. Bracteae pedicello adpressae, cucullato-concavae, suborbiculares, obtusae, pallide virides, utrinque atrofurfuraceae, c. 0.8—0.85 cm. longae, 0.85—0.9 cm. latae. Flores mediocres, patentes vel patentissimi, carnosi, c. 2.2 cm. lati, 1.9 cm. longi, sepalis

petalisque patentissimis, dilute flavis, intus margine apicali excepto dense traverse minute cinnamomee subpantherino-maculatis, praesertim sepalis dorso virescenti-suffusis, sepalis dorso furfuraceo-punctatis et medio cinnamomeis. Sepalum dorsale obovatum, obtusum, basi latum, concavum, margine apicali leviter convexum, dorso convexum, c. 1.17 cm. longum, 0.8 cm. latum. Sepala lateralia angulum obtusum facientia, incurvula, dorso convexa, oblique ovalia, obtusa, basi vix contracta, c. 1.2 cm. longa, 0.68 cm. lata. Petala divaricata, late oblique cuneato-obovata, obtusa, basi obliqua angusta, dorso convexa cum sulco longitudinali, bene 1 cm. longa, 0.8 cm. lata. Labellum basi pedi gynostemii brevissimo adnatum, calcaratum, 3-lobum, horizontale, gynostemio subparallelum, basi intus sulco transverso a gynostemio separatum, subtus convexum et appendice apicali excepta longitudinaliter sulcatum, carnosum, totum c. 0.925 cm. longum, intus inter lobos laterales album et valde convexum cum costa valida longitudinali lineari-oblonga nitidula ad basin calcaris valde bicruri-dilatata et incrassationem transversam retusam rotundato-bilobam faucem calcaris partim obtegentem formante; calcar brevissimum, saccatum, reversum, cum pede gynostemii angulum obtusum faciens, a dorso compressum, sulco longitudinali retusum, dilute ochraceum, extus purpureo-punctatum, intus septo longitudinali carnoso biloculare, melliferum; lobi laterales infra gynostemium porrecti, paralleli, gynostemio vix breviores, oblique quadranguli, apice truncati, plus minusve retusi et erosuli, margine antico leviter rotundati, infra apicem incrassatione transversa margini antico parallela decurrente basi incrassata papillosaque instructi, albi, intus praesertim antice purpureo-maculati; lobus intermedius porrectus, gynostemio parallelus, crasse carnosus, oblongus, apice angustato-contractus et in appendicem multo tenuiorem porrectam horizontalem quadrangulam apice vix dilatato rotundatam crenulatamque supra subtusque convexam albam c. 0.13 cm. longam 0.175 cm. latam a parte inferiore sulco transverso separatam productus, incrassatione trigono-conica margine postico elevato-dilatato papilloso faucem calcaris partim obtegente incrassationi in labelli pariete postico adpressa ad basin, incrassatione majore ovali-oblonga valde convexa anteposita, subtus convexus et appendice excepta longitudinaliter canaliculatus, roseo-albus, striis longitudinalibus maculisque purpureis notatus, subtus $^3/_5$ partibus inferioribus roseo-albus, dense purpureo-punctatus, apice albus, totus c. 0.65 cm. longus, 0.38 cm. latus. Gynostemium breve, crassum, sectione transversa suborbiculare, basi praesertim antice more *Vandae* paulum dilatatum, apice utrinque denticulo acuto porrecto marginem clinandrii non superante donatum, album, c. 0.3 cm. longum, pede subobsoleto cum ovario angulum rectum faciente, clinandrio semiorbiculari, leviter concavo cum costula longitudinali. Anthera cucullata, aequilateraliter rotundato-trapeziformis, apicem versus dilatata et in rostrum apicem versus angustatum truncatum producta, connectivo costato, thecis convexis, albida, c. 0.225 cm. lata. Pollinia 4, inaequalia, a dorso compressa, oblique rotundato-quadrangula, extus convexa, flava, postica bene minora, cum stipite mediocri lineari apice conduplicato albido pellucido et glandula mediocri c. 0.225 cm. longa. Rostellum breve, apice recurvo bidentatum. Stigma parvum, alte excavatum. Ovarium pedicellatum trigonum, basi tortum, 6-sulcatum, dilute viride, praesertim apicem versus atrofusce furfuraceum, c. 1.2 cm. longum.

Dutch New-Guinea: Without locality. (Cult. in Hort. Bog.).

The description is drawn up from a single flowering plant, missing a label. It represents, however, probably the same species, of which specimens were collected by Mantri

DJIBDJA under n. 18Dj. during the first New-Guinea expedition under Mr. LORENTZ in 1907, which did not yet flower.

The nearest ally is *V. Warocqueana* Schltr., from which it differs in the colour of the flowers, the lateral sepals being much less contracted at the base, the quadrangular truncate side lobes, the convex not conic anterior boss on the midlobe.

From *V. praealta* J. J. S. it differs by the obovate sepals, the petals being not narrower than the sepals, the broader midlobe not incurved at the apex, and from *V. curvata* J. J. S. in the colouring, broader petals, shape of the lip.

I am not sure that SCHLECHTER did not unite different species under his *V. Warocqueana*. ROLFE described and figured the flowers of his species as yellow. In the plant I described under this name they were also yellow. SCHLECHTER, however, described the flowers as being whitish inside dotted red brown.

Hymenorchis Schltr.

Hymenorchis glomeroides J. J. S. n. sp.

Tab. LXXXIII, 134.

Caulis brevis, radicans, c. 2.25 cm. longus, foliatus, internodiis c. 0.2—0.25 cm. longis. Folia c. 10, patentissima, lanceolato-linearia, apicem versus angustata, bidentata cum mucrone longiore interposito, repandula, basi apiceque serrulata, leviter recurvula, valde canaliculata, rugoso-verrucosa, dorso humiliter carinata, crasse carnosa, c. 1.2—2.4 cm. longa, inexplanata 0.3—0.4 cm. lata; vaginae breves, tubulosae, longitudinaliter verrucosae, rugosae, margine more *Glomerae* longius tortuoso-fimbriatae. Inflorescentiae e nodis caulium, deorsum spectantes, brevissimae, dense pluriflorae, pedunculo crassiusculo, c. 0.3 cm. longo, nonnullis vaginulis tubulosis verrucosis fimbriatis donato, rachide abbreviata, c. 0.3 cm. longa. Bracteae quaquaversae, patentes, triangulae, longe subulato-apiculatae, concavae, carinatae, laceratae, c. 0.275 cm. longae. Flores c. 11, teneri, sepalis petalisque patentissimis. Sepalum dorsale obovatum, rotundatum, superne erosulum ad serrulatum, apiculatum, concavum, carinatum, carina repandula et apice in apiculum exeunte, 3-nervium, c. 0.73 cm. longum, 0.48 cm. latum. Sepala lateralia, late oblique obovato-rhomboidea, obtusissima, erosula, apice serrulata, concavula, basi margineque leviter convexa, carinata, carina repandula apiculataque, 3-nervia, bene 0.7 cm. longa, 0.575 cm. lata. Petala oblique cuneato-obovata, obtusissima, erosula, concava, carinata, carina infra apicem apiculata, 3-nervia, c. 0.7 cm. longa, 0.53 cm. lata. Labellum magnam partem e calcari, totum c. 0.625 cm. longum; lamina basi gynostemio adnata, ad faucem calcaris marginem angustum recurvulum suborbicularem repandulo-erosulum usque ad apicem ovarii c. 0.2 cm. longum formans; calcar deorsum spectans, cum ovario angulum acutum faciens, oblongum, paululum a latere compressum, apice antice leviter rotundato-inflatum, c. 0.55 cm. longum, fauce 0.2 cm., apice 0.8 cm. altum. Gynostemium breve, crassum, apice incrassatum, truncatum, dorso convexum, cum anthera bene 0.2 cm., usque ad rostelli apicem bene 0.3 cm. longum, clinandrio excavato, late obverse urceolato. Anthera cucullata, leviter concava, triangula, dimidio superiore fere obtusangule recurva, acuta, basi truncata, ante loculos utrinque lobulo instructa, c. 0.16 cm. longa, bene 0.1 cm. lata. Rostellum conspicuum, triangulum, in lacinias 2 oblique oblongo-

triangulas acutas partitum. Stigma magnum, prominens, suborbiculare, margine elevatum. Ovarium pedicellatum 6-costatum, furfuraceum, c. 0.9 cm. longum.

Dutch New-Guinea: In the northern part, ridge c. 70 km. north of Carstensz-mountains, epiphytical. (L. A. C. M. DOORMAN nrs. 39, 40 and 41, 3 September 1914; "white, the lip with a light green tip").

The species differs from *H. kaniensis* Schltr. by its more flowered inflorescences, obovate petals and sepals, not apiculate lip without keel and provided with a longer spur, differently shaped anther and longer stipes of the pollinia; from *H. caulina* Schltr. by its shorter stems and leaves, shorter more flowered inflorescences, differently coloured flowers, and from *H. foliosa* Schltr. by its shorter stems, narrower leaves, narrower inflorescences, obovate sepals and petals, differently shaped anther and shorter pedicel and ovary.

Description from a specimen preserved in alcohol.

Schoenorchis Bl.

Schoenorchis plebeja J. J. S. in Nat. Tijdschr. Ned. Ind. LXXII (1912), 31; etc.

Dutch New-Guinea: Mamberamo, near Prauwen-bivouac, 10 m., epiphytical in forest. (H. J. LAM n. 643, July 1920).

Sarcanthus Lndl.

Sarcanthus bicornis J. J. S. in Bull. Dép. Agric. Ind. néerl. XIX (1908), 35; in Nova Guinea VIII (1909), 123, t. XLII, 139.

Dutch New-Guinea: In the northern part, bank of Otken-river, 10 m., epiphytical. (H. J. LAM n. 597, July 1920).

Sarcanthus decurvicalcar J. J. S. n. sp.

Tab. LXXXIII, 135.

Caulis elongatus, pars adest c. 8 cm. longus, internodiis c. 1.8—2.2 cm. longis. Folia linearia, apice valde obliqua, plus minusve bidentata, acuta vel subacuta, sicco coriacea, c. 12.5—14 cm. longa, 0.9 cm. lata; vaginae internodia superantes, tubulosae, apice antice excisae, sicco longitudinaliter multicostatae et minute transverse rugulosae. Inflorescentiae vaginas 2 perforantes, subpatentissimae, foliis breviores, racemosae, laxe pluriflorae, pedunculo tenui, c. 4 cm. longo, vaginulis c. 3 brevibus basi tubulosis ad c. 0.3 cm. longis donato, rachide subflexuosa, c. 4 cm. longa. Bracteae adpressae, ad c. 0.175 cm. longae. Flores parvi, macerati c. 0.65 cm. lati, sepalis petalisque patentissimis. Sepalum dorsale erectum, subovale, obtusum, basi latum, valde concavum, 3-nervium, c. 0.3 cm. longum, 0.175 cm. latum. Sepala lateralia divaricata, oblique oblonga subquadrangula, obtusa, obtuse apiculata, leviter concava, 3-nervia, c. 0.34 cm. longa, 0.24 cm. lata. Petala minora, divaricata, oblique oblonga, superne paulum dilatata, acuta, 1-nervia, c. 0.275 cm. longa, 0.1 cm. lata. Labellum sub gynostemio porrectum, basi eo adnatum, 3-lobum, calcaratum, pariete postico basi callo erecto triangulo obtuso carnoso sqamiformi instructum, incrassatione ad basin lobi intermedii in dentem exeunte intus in pariete antico in flexu, ex apice lobi intermedii usque ad apicem ovarii fere 0.4 cm. longum, ex apice loborum lateralium usque ad apicem calcaris c. 0.45 cm. metiens; lobi laterales erecti, oblique latiuscule trianguli, rotundati, concavi, margine antico c. 0.14 cm. longi; lobus inter-

medius majusculus, porrectus, cum calcari angulum subrectum cum lobis lateralibus sinus rotundatos facientes, subtus incrassatione transversa a calcari separatus, carnosus, ovalis, rotundatus, basi latus, medio late canaliculatus, marginibus convexis, c. 0.2 cm. longus, 0.16 cm. latus; calcar cum ovario angulum acutum faciens, incurvulum, conicum, obtusum, usque ad apicem ovarii c. 0.33 cm. metiens. Gynostemium cum ovario angulum obtusum faciens, apice recurvulum, oblique conicum, apice truncatum, cum anthera c. 0.15 cm. longum, basi in pedem brevissimum basi labelli adnatum productum, clinandrio transverse ovali concavo cum costula inconspicua longitudinali. Anthera cucullata, e basi transverse ovali didyma in appendicem brevem latam breviter acute triangulo-acuminatam producta, fere 0.1 cm. lata. Pollinia 4, corpuscula 2 globosa formantia, cum stipite lineari basin versus angustato c. 0.13 cm. longa. Stigma alte excavatum, subovato-triangulum, apicem versus contractum. Ovarium 6-sulcatum, c. 0.25 cm. longum; pedicellus c. 0.15 cm. longus.

Schouten Islands: Biak, northern coast, Korim. (W. FEUILLETAU DE BRUYN n. 456; "grows in the full sun; flowers yellow").

Differs from *S. bicornis* J. J. S. and *S. Gjellerupii* J. J. S. in the spur pointing downward and not backward, the broader rounded side-lobes and the shorter column.

Description from a small piece of herbarium.

Trichoglottis Bl.

Trichoglottis litoralis Schltr. in Schum. et Laut. Nachtr. Fl. D. Schutzgeb. Südsee (1905), 230; etc.

Schouten Islands: Biak, north-coast, Warsa. (W. FEUILLETAU DE BRUYN n. 286, 12 August 1915; "grows in half shade along the beach").

Pomatocalpa Breda.

Pomatocalpa marsupiale J. J. S. in Nat. Tijdschr. Ned. Ind. LXXII (1912), 35; Schltr. in Orch. D. N. Guinea (1913), 988. — *P. orientale* J. J. S. l. c. 36; etc.

Dutch New-Guinea: In the northern part, Mamberamo, plain at the foot of Van Rees-mountains. (W. FEUILLETAU DE BRUYN n. 279, 8 December 1914).

According to SCHLECHTER *P. marsupiale* (Krzl.) J. J. S. and *P. orientale* J. J. S. are synonyms. I have seen none of KRÄNZLIN's specimens and from his description the identity of the two plants does not follow.

Pomatocalpa incurvum J. J. S. in Nat. Tijdschr. Ned. Ind. LXXII (1912), 34; in N. Guinea XII (1913), 101, t. XXVIII, 86; etc.

Dutch New-Guinea: In the northern part, Mamberamo. (W. FEUILLETAU DE BRUYN n. 19). Same locality, near Prauwen-bivouac, 90 m. (H. J. LAM n. 1032, September 1920). Same locality, Meervlakte near Prauwen-bivouac, 60 m. (H. J. LAM n. 898, August 1920).

Robiquetia Gand.

Robiquetia Mooreana J. J. S. in Nat. Tijdschr. Ned. Ind. LXXII (1912), 44; in N. Guinea XII (1916), 462; etc.

Dutch New-Guinea: In the northern part. (A. C. TH. THOMSEN, without number, 14 April 1914). Mamberamo, Pionier-bivouac, 26 m., epiphytical in forest. (A. C. TH. THOMSEN n. 714, 8 May 1914). Same locality, 70 m., forest. (H. J. LAM n. 735, July 1920).

Robiquetia gracilistipes J. J. S. in Nat. Tijdschr. Ned. Ind. LXXII (1912), 43. — *R. sqamulosa* J. J. S. l. c. 45; etc.

Dutch New-Guinea: In the northern part, Meervlakte near Prauwen-bivouac, 90 m., forest. (H. J. LAM n. 1124, September 1920).

Malleola J. J. S. et Schltr.

Malleola palustris J. J. S. et Schltr. Orch. D. N. Guinea (1913), 981. — *Saccolabium palustre* J. J. S. in Bull. Dép. Agric. Ind. néerl. XIX (1908), 35; in N. Guinea VIII (1910), 130, t. XLIV, 147.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 26 m., forest. (A. C. TH. THOMSEN n. 704, 28 April 1914; n. 853, 7 September 1914). Same locality, near Prauwen-bivouac, 90 m., forest. (H. J. LAM nrs. 1177 and 1196, September 1920).

Microtatorchis Schltr.

Microratorchis clavicalcarata J. J. S. n. sp.

Tab. LXXXIII, 136.

Caulis brevis, ad c. 1.5 cm. longus, radicibus elongatis tenuibus. Folia c. 4—6, oblique lineari-lanceolata, plerumque plus minusve falcata, inaequaliter acute bidentata cum mucrone longiore interposito, basi sensim angustata canaliculataque, 3-nervia, sicco membranacea, c. 2.6—4.5 cm. longa, sicco 0.26—0.5 cm. lata; vaginae breves, conduplicatae, basi tubulosae, verisimiliter inarticulatae. Inflorescentiae axillares, erectae, folia mox superantes, diu flores gignentes, laxe multiflorae, pedunculo tenui, inferne tereti, superne anguste alato, c. 2—3.5 cm. longo, vaginula bracteiformi donato, rachide elongata, flexuosa, acute alata, compressa, c. 5.5—15 cm. longa, ad 0.15 cm. lata, ad nodos unilateraliter abrupte interrupta et bracteam cum flore gerente, facie florem versus spectante anguste excavata, internodiis c. 0.275—0.8 cm. longis. Bracteae alternatim bifariae, patentissimae, triangulae, acutae, concavae, dorso acute carinatae, c. 0.14—0.2 cm. longae. Flores parvi, patentes, carnosuli, sepalis petalisque basi connatis patentibus recurvis stellati, c. 0.5 cm. diam. Sepalum dorsale subulatum, apice breviter conicum, subacutum, leviter canaliculatum, dorso convexum, 1-nervium, totum c. 0.3 cm. longum, parte libera c. 0.25 cm. longa, 0.075 cm. lata. Sepala lateralia similia sed obliqua, tota c. 0.34 cm. longa, parte libera 0.27 cm. longa, 0.07 cm. lata. Petala minora, triangulo-subulata, acuta, parte libera basi utrinque angulata, 1-nervia, tota c. 0.28 cm. longa, parte libera 0.2 cm. longa, c. 0.08 cm. lata. Labellum simplex, calcaratum, porrectum, carnosulum, supra visum anguste triangulum, acutum, superne valde a latere compressum, subensiforme, apice quasi oblique desectum, facie superiore faciem inferiorem superans, usque ad medium supra canalicula superne sensim angustata instructum, marginibus basi incurvis, basi excavatione late ovato-triangula donatum, inferius excavatione minore ovali margine erecto cincta ad faucem calcaris, inexplanatum c. 0.26 cm. longum, 0.1 cm. latum ad basin; calcar elongatum, basi ovario parallelum, valde incurvum, clavatum, dimidio inferiore tenue, dimidio superiore oblique inflatum a latere compressum obtuse apiculatum, inexplanatum c. 0.2 cm., explanatum 0.32 cm. longum. Gynostemium brevissimum, 3-lobum, clinandrio (lobo intermedio) dorso valde convexo, auriculis (lobis lateralibus) longioribus, rotundatis, in excavationem basilarem labelli quadrantibus, intus stig-

maticis. Anthera cucullata, a latere compressa, appendice majuscula lata obtusa,. Pollinia 2, ovalia, stipite tenui. Ovarium pedicellatum crassiusculum, 6-sulcatum, c. 0.28 cm. longum.

Dutch New-Guinea: Idenburg-river, c. 1200 m., epiphytical in forest. (W. FEUILLETAU DE BRUYN n. 89, September 1914).

From all species hitherto described this differs in the long spur.

The flowers are said to be white.

Description from herbarium specimens.

Microtatorchis triloba J. J. S. n. sp.

Tab. LXXXIV, 137.

Caulis elongatus, tenuis, radicans, superne foliatus, c. 5—8.5 cm. longus. Folia c. 10—17, marcescentia fibras relinquentia, lanceolata, apice obtusa vel subacuta, longiuscule mucronata, versus basin sensim angustata, 3-nervia, costa media dorso prominente, membranacea, ad c. 0.75 cm. longa, 0.2—0.3 cm. lata; vaginae tubulosae. Inflorescentiae axillares, elongatae, diu flores gignentes, multiflorae, c. 9—11.5 cm. longae, rachide tenui, angulata, minute papillosa, muricibus patentissimis longis subulatis papillosis tecta. Bracteae parvae, quaquaversae, patentissimae, triangulae, acutae, muricibus 1 vel paucis vel ramosis utrinque ad basin, c. 0.15 cm. longae. Flores parvi, c. 0.275 cm. longi, sepalis petalisque concavis, 1-nervis, basi in tubum obliquum subtus fissum explanatum c. 0.27 cm. latum longitudine 0.05 cm. connatis. Sepalum intermedium lanceolatum, parte libera oblonga obtusiuscula apiculata, totum 0.175 cm. longum, parte libera 0.125 cm, longa, bene 0.05 cm. lata. Sepala lateralia suboblique elliptico-lanceolata, 0.175 cm. longa, parte libera oblongo-ovata, acutata, c. 0.125 cm. longa, 0.06 cm. lata. Petala paulo breviora, 0.17 cm. longa, parte libera ovato-elliptica, acuta, apiculato-acuminata, c. 0.125 cm. longa, 0.06 cm. lata. Labellum calcaratum, totum c. 0.275 cm. longum, lamina concava, antice triloba, subtus convexa, explanata cuneata, c. 0.15 cm. longa, 0.17 cm. lata, 4-nervia, nervis ante medium binis confluentibus, basi tenui, lobis lateralibus intus postice rotundato-incrassatis, erectis, triangulis, falcato-incurvis, obtusis, leviter irregulariter marginatis, lobo intermedio porrecto, cum lobis lateralibus sinus rotundatos faciente, vix recurvulo, triangulo, acuto, carnosulo, intus verruculoso et medio longitudinaliter incrassato, incrassatione sulcis ab incrassationibus loborum lateralium separata, c. 0.05 cm. longo; calcar reversum, ovario adpressum, clavatum, subtus longitudinaliter canaliculatum, parte inferiore tubulosa a dorso compressa brevi, parte inflata paululo a dorso compressa ovata apice vix contracta anguste obtusa, totum c. 0.125 cm. longum, parte inflata fere 0.1 cm. lata. Gynostemium brevissimum, transversum, basi contractum, dorso convexum, apice truncatum, fere 0.05 cm. longum, lobis stigmaticis apicem gynostemii superantibus, latis, concavis, obtusis, marginibus proximis elevato-rotundatis basi V-formiter confluentibus. Ovarium triangulum, 6-costatum, praesertim costis proximis costa mediana dorsali superne parce muriculatis, c. 0.1 cm. longum; pedicellus trigonus, basi incrassatus, c. 0.07 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, north slope, 1780 m., epiphytical. (H. J. LAM n. 1495, 4 October 1920; "roots, stem and leaves light green, inflorescences and bracts green, flowers orange (greenish yellow when young) with light yellow base, spur and ovary").

M. muriculata Schltr. seems to be the only species as yet known with a trilobulate lip.

M. triloba J. J. S. differs from the said species in the elongate many-leaved stems, larger differently coloured flowers, broader cuneate lip with a larger clavate spur.

The plant stands more or less between the sections *Eumicrotatorchis* and *Geissanthera*, the stipule-like appendages of the bracts being represented only by murices.

Description from herbarium and materials preserved in alcohol.

Microtatorchis Lamii J. J. S. n. sp.

Tab. LXXXIV, 138.

Planta pusilla. Caulis brevissimus, repens, crassiusculus, teres, repens. Inflorescentiae axillares, erectae, laxe multiflorae, diu flores gignentes, pedunculo c. 5—5.75 cm. longo, vaginulis c. 6—7 superne in bracteas vergentibus donato, rachide elongata, flexuosa, c. 3.5—5 cm. longa, internodiis alis 2 satis conspicuis a bracteis decurrentibus canaliculatis, c. 0.225—0.275 cm. longis. Bracteae alternatim bifariae, erecto-patentes patentesve, incurvulae, apice hamatae, valde concavae, triangulae, basi obtusa rachidem semiamplectentes, nervis 3 dorso prominentibus, basi utrinque stipulam parvam patentem triangulam gerentes, c. 0.2 longae. Flores c. 0.575 cm. longi. Sepala petalaque basi breviter connata, suboblonga, apicem versus angustata vel subacuminata, obtusa (in flore novello magis ovata obtusaque), dorso ad apicem incrassata, 1-nervia, petala magis ovata subacuminata vel contracta obtusa vel subacuta, explanata una c. 0.45 cm. lata, sepalum dorsale c. 0.2 cm. longum, fere c. 1 cm. latum, sepala lateralia c. 0.225 cm. longa, fere 0.1 cm. lata, petala fere 0.2 cm. longa, fere 0.1 cm. lata. Labellum calcaratum, totum c. 0.475 cm. longum, lamina concava, 3-loba, 4-nervia, explanata obverse triangula, acuminata, c. 0.2 cm. longa, ad lobos laterales 0.18 cm. lata, lobis lateralibus erectis, oblique rotundato-triangulis, sinibus latis a lobo intermedio triangulo truncato-obtuso carnoso concavo subtus convexo excavatione ∧-formi donato c. 0.04 cm. longo separatis; calcar conspicuum, reversum, incurvulum, cum ovario angulum faciens, conspicue clavatum, apice antice rotundato-inflatum, c. 0.33 cm. longum. Gynostemium brevissimum, bifidum, cum anthera late trilobum, clinandrio concavo, lobis stigmaticis porrectis, latis, orbiculari-obovatis, dorso convexis, subtus concavis. Anthera cucullata, transverse rotundato-quadrangula, in rostrum breve quadrangulum truncatum contracta, c. 0.03 cm. longa. Pollinia 2, oblique ovalia, stipite spathulato, inferne tenuissimo, in laminam rhombeam dilatato, glandula magna oblonga. Ovarium 6-sulcatum, c. 0.24 cm. longum.

Dutch New-Guinea: In the northern part, Doorman-top, 3520 m., open summit between stones, terrestrial. (H. J. LAM n. 1665a, mixed with n. 1665 and 1665b, 18 October 1920).

In the long clavate spur this resembles *M. clavicalcar* J. J. S. It belongs, however, to the section *Geissanthera* on account of the stipules at the base of the bracts.

See also the remark under *M. terrestris* J. J. S.

Description from two dry specimens.

Microtatorchis terrestris J. J. S. n. sp.

Tab. LXXXV, 139.

Terrestris. Caulis erectus vel decumbens, c. 1—3 cm. longus, dense squamis triangulis subulato-acuminatis obsessus, radicibus numerosissimis dense fasciculatis verticalibus. Inflorescentiae numerosae, erectae, dense fasciculatae, rigidae, multiflorae, diu flores gignentes, pedunculo

c. 3—8 cm. longo, nonnullis vaginulis bracteiformibus non tubulosis donato, rachide c. 2—8 cm. longa. Bracteae alternatim bifariae, rachidem semiamplectentes, patentissimae, late ovato-triangulae, obtusae, concavae, basi utrinque in rachidem decurrentes, dorso c. 0.125 cm. longae, utrinque basi stipula anguste triangula plus minusve falcata donatae. Flores parvi, c. 0.375 cm. longi, sepalis petalisque basi brevissime connatis. Sepalum dorsale oblongum, obtusum, initio concavum, 1-nervium, c. 0.18—0.23 cm. longum, 0.07 cm. ad fere 0.1 cm. latum. Sepala lateralia oblique oblonga, apice angustata, subobtusa, dorso ad apicem incrassata, 1-nervia, c. 0.2—0.25 cm. longa, c. 0.1 cm. lata. Petala oblique oblonga ad rhombea, subsigmoidea, obtusiuscula, 1-nervia, c. 0.23 cm. longa, 0.075 ad bene 0.1 cm. lata. Labellum calcaratum, totum c. 0.325 cm. longum, totum explanatum cum calcari cuneatum, c. 0.3 cm. longum, lamina gynostemium longe superante, concava, apice 3-loba, explanata c. 0.16 cm. longa, 0.2 cm. lata; lobi laterales erecti, semiorbiculari-trapezoidei, angulis rotundati; lobus intermedius porrectus, laterales superans sed eis multo minor, cum lobis lateralibus angulos obtusos faciens, carnosus, a latere visus oblongo-quadrangulus, truncatus, supra visus triangulus, obtusiusculus, supra concavus, vix 0.025 cm. longus; calcar reversum, cum ovario angulum acutum faciens, subconicum, praesertim antice convexum, obtusum, c. 0.1 cm. longum. Gynostemium brevissimum, apice truncatum, c. 0.05 cm. longum, clinandrio semiorbiculari, concavo, lobis stigmaticis porrectis, gynostemio fere duplo longioribus, apice rotundatis, concavis, basi V-formiter confluentibus. Anthera cucullata, orbiculari-obreniformis, in rostrum latum marginibus basi incurvis constrictum subrhombeum obtusum supra convexum subtus concavum recurvum producta, c. 0.05 cm. longa. Pollinia 2, ovalia, stipite spathulato basi tenui lamina suborbiculari, glandula conspicua lanceolata. Rostellum breve, bidentatum. Ovarium 6-sulcatum, muricibus paucis clavatis in sulcis, c. 0.225 cm. longum.

Dutch New-Guinea: In the northern part, Doorman-top, 3520 m., open summit between stones, terrestrial, common. (H. J. LAM n. 1665, 18 October 1920; "roots pale brown, leaf and stem greenish yellow or yellow, flower light green when young, afterwards yellow or orange-yellow, spur and ovary lighter").

Under this number 3 distinct species were mixed together. One of these, n. 1665b, was the only specimen which bore small leaves, but the material was too poor as to allow description. N. 1665a was represented by two specimens, of which one bore the label cited above. As appears from the indicated label, the leaves of the plant have been described, although the specimens are leafless; no more there were leaves on n. 1665, which was represented by a rather large number of specimens. Consequently it is uncertain to which of the 3 species the label refers.

M. terrestris J. J. S. is an interesting species, being the first terrestrial representative of the genus. The sepals and petals are connate only at their very base.

Description from herbarium only.

Microtatorchis podochiloides J. J. S. n. sp.

Tab. LXXXV, 140.

Caulis paulo elongatus, tenuis, ad c. 3 cm. longus, foliatus, radicans, internodiis c. 0.175—0.3 cm. longis. Folia parva, anguste lanceolata, apice crenulata, subulato-acuminata, tenuia, 3-nervia, c. 0.7—1.1 longa, 0.1—0.125 cm. lata, apicem versus paulo dilatata. Inflorescentiae

axillares, elongatae, laxe multiflorae, diu flores gignentes, c. 12—22.5 cm. longae, internodiis c. 0.25—0.675 cm. longis. Bracteae foliis *Podochili* similes, patentes ad patentissimae, lanceolatae, apice irregulariter crenulatae ad dentatae, longe subulato-apiculatae, 3-nerviae, ad c. 0.75 cm. longae, 0.13 cm. latae, utrinque stipula subulata ad c. 0.24 cm. longa instructae. Flores parvi, c. 0.37 cm. longi et lati, sepalis petalisque basi parallelis et in tubum subtus fissum connatis, paulo infra medium obtuse recurvulis, apice incurvulis, 1-nerviis. Sepalum dorsale lineare, subacutum, 0.275 cm. longum, parte libera 0.23 cm. longa, 0.12 cm. lata, apice subulato-incrassato 0.125 cm. longa. Sepala lateralia intermedio similia sed obliqua, c. 0.32—0.325 cm. longa, parte libera c. 0.22—0.225 cm. longa, parte incrassata 0.15 cm. longa. Petala paulo breviora, c. 0.275 cm. longa, parte libera subacuta, basi paulo rotundato-dilatata, c. 0.18 cm. longa. Labellum calcaratum, simplex, angustum, supra visum subulatum, parte inferiore tenui marginibus erectis concava et gynostemium includente, in $^1/_3$ supra basin leviter obtuse angule curvatum, superne subulato-incrassatum incurvulumque, anguste obtusiusculum, nervis 4 in $^1/_4$ supra basin binis confluentibus, lamina c. 0.28 cm., explanata 0.3 cm. longa, 0.08 cm. lata, parte incrassata bene 0.1 cm. longa; calcar reversum, subglobosum, apice mammilloso-contractum, fere 0.1 cm. longum. Gynostemium brevissimum, crassum, dorso convexum, supra visum fere usque ad medium in lobulos stigmaticos 2 latos concavos conduplicatos cymbiformes obtusos antheram superantes subtus basin versus V-formiter confluentes partitum, c. 0.05 cm. longum. Anthera cucullata, obtusa. Pollinia 2, obovoidea, stipite spathulato, glandula oblonga. Ovarium 6-sulcatum, in sulcis parce atrofusce clavato-muriculatum, c. 0.2 cm. longum. Capsula reliquiis floris coronata, 6-angulata, in costis 6 parce clavato-muriculata, basi apiceque obtusa, immatura bene 0.6 cm. longa, 0.175 cm. diam., brevissime pedicellata.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1780 m., moss-grown forest, epiphytical. (H. J. LAM n. 1922, 8 November 1920; "roots, leaves, flowers, ovaries very light green").

As for the inflorescences this species much resembles *M. chaetophora* Schltr. and *M. papuana* Schltr., but the flowers are much smaller and the sepals, petals and lip thickened towards the apex and of a different shape. The bracts, without the stipules, are much like the leaves of some species of *Podochilus*.

Description from herbarium and inflorescences preserved in alcohol.

Taeniophyllum Bl.

Sect. Brachyanthera.

Taeniophyllum tripulvinatum J. J. S. n. sp.

Tab. LXXXVI, 141.

Caulis brevis, squamis subulatis dense obtectus, radicibus elongatis, repentibus, complanatis, ad c. 17 cm. longis, sicco ad 0.175 cm. latis. Inflorescentiae numerosae, dense multiflorae, pedunculo capillari, glabro, c. 3—5 cm. longo, nonnullis vaginulis tubulosis donato, rachide ad c. 0.7 cm. longa, cum bracteis 0.15—0.16 cm. lata, internodiis c. 0.03—0.05 cm. longis. Bracteae alternatim bifariae, densae, patentes, imbricatae, concavae, triangulae, acute apiculatae, dorso ad c. 0.1 cm. longae. Flores parvi, c. 0.3 cm. longi, sepalis petalisque parallelis. Sepalum dorsale ellipticum, obtusum, apice 3-dentatum, concavum, 3-nervium, c. 0.35 cm. longum, 0.175 cm. latum. Sepala lateralia oblique oblonga, obtusa, concava, 3-nervia, c. 0.32 cm.

longa, bene 0.15 cm. lata. Petala oblique ovalia, obtusa, valde concava, superne leviter irregulariter marginata, 3-nervia, c. 0.325 cm. longa, 0.18 cm. lata. Labellum porrectum, simplex, brevissime calcaratum, totum c. 0.325 cm. longum, bene 0.2 cm. latum, lamina supra visa ovali, valde concava, subtus convexa, margine apice excisa et minute apiculata incurva minute undulata erosula, intus inferne incrassationibus 2 pulviniformibus convexis orbicularibus superne 1 longitudinaliter ovali instructa, 5-nervia, praesertim nervis exterioribus valde ramosis, explanata 6-angulari basi truncata, apice leviter obtusangule excisa, c. 0.3 cm. longa, bene 0.3 cm. lata; calcar minimum, reversum, subtus visum orbiculare, applanatum, c. 0.025 cm. longum. Gynostemium brevissimum, crassum, dorso convexum, absque anthera 0.05 cm. longum, clinandrio excavato transverso apice truncato, lobis stigmaticis conspicuis concavis. Anthera cucullata, ambitu quinquangularis, e basi transverse quadrangula in rostrum breve triangulum acuminata, basi rotundato-bilobula, medio leviter contracta, tenuis, c. 0.05 cm. lata. Pollinia 4, subglobosa. Rostellum reversum, bipartitum, laciniis abrupte porrectis, subulatis, apicem gynostemii fere aequantibus. Ovarium 6-sulcatum, in sulcis parce furfuraceo-puberulum, c. 0.175 cm. longum; pedicellus angulatus, c. 0.225 cm. longus. Capsula immatura parce furfuraceo-puberula.

Dutch New-Guinea: In the northern part, Mamberamo. (A. C. TH. THOMSEN nrs. 844 and 884, 4 and 22 September 1914; "flowers yellow"). Pionier-bivouac, 10 m., epiphytical in forest. (H. J. LAM n. 586, 7 July 1920; "flowers orange, ovary greenish yellow"; n. 619 (type), 14 July 1920; "flowers yellowish orange, ovary yellowish green").

This species which is probably best classed with SCHLECHTER's section *Brachyanthera* is well characterized by the form of the spur and the blade of the lip.

Description from herbarium and materials preserved in alcohol.

Sect. Rhynchanthera.

Taeniophyllum cymboglossum J. J. S. n. sp.

Tab. LXXXVI, 142.

Caulis abbreviatus, squamatus, radicibus elongatis, repentibus, compressis, c. 55 cm. longis, 0.2—0.3 cm. latis. Inflorescentiae breves, pauciflorae, pedunculo filiformi, c. 1.2—1.9 cm. longo, inferne paucis vaginulis donato, rachide brevi, leviter incrassata, glabra, c. 0.4 cm. longa, cum bracteis fere 0.3 cm. lata, internodiis c. 0.075 cm. longis. Bracteae alternatim bifariae, patentes, margine superiore patentissimae, concavae, dorso convexae, apicem versus obtuse carinatae, subulato-apiculatae, dorso fere 0.1 cm. longae. Flores mediocres, cum calcari c. 1.7 cm. longi, sepalis dorso leviter verruculosis petalisque divergentibus. Sepalum dorsale lanceolatum, obtusum, dorso breviter conico-apiculatum, leviter concavum, 3-nervium, c. 0.75 cm. longum, 0.2 cm. latum. Sepala lateralia oblique lanceolata, obtusa, leviter concava, dorso leviter concava, 3-nervia, c. 0.75 cm. longa, 0.225 cm. lata. Petala oblique lanceolata, obtusa, leviter concava, dorso incrassata, 3-nervia, c. 0.7 cm. longa, 0.18 cm. lata. Labellum calcaratum, totum 1.5 cm. longum, lamina 3-loba, lateraliter compresso-canaliculata, carnosa, 5-nervia, nervis exterioribus ramosis, omnibus superne confluentibus, explanata ovata, triangulo-acuminata, c. 0.6 cm. longa, 0.45 cm. lata; lobi laterales erecti, tenues, basi lati, leviter rotundati, apice vix producti, vix obtuse dentiformes; lobus intermedius porrectus, carnosus, lateraliter compressus, supra visus triangulus, margine erecto angusto tenuissimo, ceterum supra planus, subtus carinatus, carina subverruculosa ultra apicem obtuse prominente, sectione transversa triangulus,

magnam partem cavus, cavitate membrana horizontali postice triangulo-excisa obtecta, c. 0.25 cm. longus, 0.2 cm. latus; calcar elongatum, reversum, cum ovario angulum acutum faciens, leviter recurvulum, clavatum, leviter lateraliter compressum, obtusum, c. 0.93 cm. longum. Gynostemium breve, crassum, truncatum, dorso lateribusque convexum, c. 0.17 cm. longum, clinandrio alte excavato suborbiculari, lobis stigmaticis longitudinalibus angustis excavatis. Anthera cucullata, rotundato-quadrangula, in rostrum longissimum lineare subtus canaliculatum medio fere valde recurvum apice abrupte triangulo-acuminatum acutissimum producta, inexplanata c. 0.15 cm. longa. Pollinia 4, paululum inaequalia, oblique subovalia, extus convexa, cum stipite elongato spathulato superne cucullato-inflexo parte inferiore tenuissimo glandula longissima lineari-lanceolata c. 0.25 cm. longa parallelo geniculato-curvato bene 0.3 cm. longa. Rostellum magnum, prominens, submalleiforme, utrinque gynostemium paululum superans, totum 0.2 cm. longum, parte antica in lacinias 2 parallelas rectas oblongas obtusas subtus concavas partita, parte postica longe subulata, acuta, subtus concava. Ovarium 6-sulcatum, in sulcis furfuraceum, c. 0.4 cm. longum.

Dutch New-Guinea: In the northern part, Prauwen-bivouac on the Idenburg-river, 100 m., forest on hill, near a small rivulet, epiphytical. (H. J. LAM n. 1085, 6 September 1920; "rachis and bracts pale green, flowers yellow, spur pale yellow, column yellowish white, ovary pale yellow").

This species is allied to *T. Jadunae* Schltr., *T. stenosepalum* Schltr. and *T. malianum* Schltr., but well distinguished by the larger flowers and characteristics of the floral parts.

Description from a specimen with one flower preserved in alcohol.

Taeniophyllum recurvirostrum J. J. S. n. sp.

Tab. LXXXVI, 143.

Pusillum. Caulis abbreviatus, radicans, radicibus subplanis, sectione transversa subellipticis, c. 12.5 cm. longis, 0.125 cm. latis. Inflorescentiae dense pauciflorae, pedunculo filiformi, c. 2.5 cm. longo, vaginulis c. 2 tubulosis donato, rachide incrassata, parte adest c. 0.2 cm. longa, cum bracteis 0.15 cm. lata, internodiis brevissimis, vix 0.05 cm. longis. Bracteae patentes, rachidem amplectentes, late triangulae, obtusae, concavae, carnosulae, c. 0.075—0.08 cm. longae. Flores parvuli, c. 0.75 cm. longi, sepalis petalisque parallelis. Sepalum dorsale anguste oblongum, obtusum, leviter concavum, 3-nervium, c. 0.325 cm. longum, bene 0.1 cm. latum. Sepala lateralia oblique anguste oblonga, apice breviter falcatula, obtusa, leviter concava, dorso praeter costam mediam praesertim versus apicem incrassata, 3-nervia, c. 0.325 cm. longa, bene 0.1 cm. lata. Petala oblonga, obtusa, concava, dorso medio incrassata, 3-nervia, c. 0.3 cm. longa, 0.15 cm. lata. Labellum calcaratum, lamina conduplicato-concava, parte mediana longitudinaliter incrassata, excavatione longitudinali angusta usque in $^3/_5$ partes supra basin antice membrana horizontali excisa obtecta, explanata ambitu suborbiculari-rhombea, utrinque rotundato-obtusangula, apice in lobulum triangulum obtusiusculum concavum c. 0.075 cm. longum 0.1 cm. latum contracta, 5-nervia, nervis exterioribus tripartitis, c. 0.3 cm. longa, 0.28 cm. lata; calcar reversum, cum ovario angulum acutum faciens, clavatum, subrectum, basi leviter lateraliter compressum, dimidio superiore praesertim subtus leviter rotundato-inflatum, apice recurvulum obtusumque, c. 0.4 cm. longum. Gynostemium brevissimum, crassum, cum anthera fere 0.1 cm. longum, excavato-trilobum, clinandrio (excavatione postica) concavo transverse ovali, excavationibus lateralibus (lobis stigmaticis) longitudinalibus, oblongis, inferne V-formiter confluentibus.

Anthera cucullata, subsemiglobosa, in rostrum longissimum lineare medio fere obtusangule recurvum subtus canaliculatum apicem versus paululum dilatatum et vix bidentatum producta, inexplanata tota c. 0.14 cm. longa, 0.05 cm. lata. Pollinia 4, subobovoideo-ovalia, extus convexa, intus subapplanata, cum stipite spathulato apice recurvulo inferne tenuissimo supra basin obtusangule curvato et glandula longissima lineari-lanceolata utrinque acutissima c. 0.16 cm. longa. Rostellum malleiforme, parte antica bipartita cum laciniis oblongis obtusis concavis gynostemium vix superantibus, parte postica oblonga, obtusa, subtus concava, laciniis anticis breviore. Ovarium 6-sulcatum, furfuraceum, c. 0.275 cm. longum.

Dutch New-Guinea: In the northern part. (A. C. TH. THOMSEN, without number and locality, 22 August 1914).

Close to *T. malianum* Schltr. but with smaller flowers, a broader lip with a much smaller midlobe, the cavity acute, and a somewhat bidentate anther. From *T. stenosepalum* Schltr. it differs by the broad sepals and petals, much shorter top of the lip and acute gland.

Description from a specimen preserved in alcohol.

Taeniophyllum tamianum J. J. S. in Bull. Jard. Bot. Buit. 2e sér. XIII (1914), 74; in N. Guinea XII (1916), 464, t. CLXXX, 335.

Dutch New-Guinea: In the northern part, Mamberamo, near Pionier-bivouac, 10 m., forest, epiphytical. (H. J. LAM n. 631, 16 July 1920; "roots dark green above, with a broad whitish band beneath, flowers bright yellow, ovary yellowish green").

Taeniophyllum manubrioliferum J. J. S. n. sp.

Tab. LXXXVII, 144.

Caulis brevis, squamatus, radicibus elongatis, complanatis, c. 30 cm. longis, ad 0.4 cm. latis. Inflorescentiae laxius multiflorae, diu flores gignentes, pedunculo filiformi, glabro, c. 9.75 cm. longo, nonnullis vaginulis tubulosis donato, rachide flexuosa, c. 6 cm. longa, internodiis facie florem versus spectatante applanatis, c. 0.175—0.2 cm. longis. Bracteae alternatim bifariae, patentes, margine superiore patentissimae, rachidem amplectentes, triangulae, concavae, obtuse carinatae, carina ultra apicem producta, glabrae, dorso c. 0.125 cm. longae. Flores majusculi. Sepalum dorsale lanceolatum, sensim longe angustatum, anguste obtusum, dorso apiculatum, 3-nervium, c. 0.97 cm. longum, 0.25 cm. latum. Sepala lateralia lanceolata (apice?), concava, 3-nervia, bene 1 cm. longa, 0.22 cm. lata. Petala e basi oblique subovato-lanceolata longe tenuiterque angustata, (apice?), concava, apice excepto ciliolata, 3-nervia, bene 1 cm. longa, 0.24 cm. lata. Labellum elongatum, calcaratum, totum c. 1.25 cm. longum, lamina porrecta, concava, dorso convexa, triloba, basi ad faucem calcaris callis 2 parvis longitudinalibus donata, ante callos leviter incrassata, 5-nervia, nervis exterioribus ramosis, explanata ambitu ovata, acuminata, c. 0.9 cm. longa, hypochylio transverse ovali, c. 0.26 cm. longo, 0.5 cm. lato; lobi laterales erecti, basi lati, leviter rotundati, apice vix prominente breviter angulati; lobus intermedius porrectus, ovatus, concavus, apice longe acuminato-conduplicatus et lateribus connatis lateraliter compresso-subulatus, c. 0.64 cm. longus, 0.34 cm. latus, subula c. 0.33 cm. longa; calcar cum ovario angulum acutum faciens, incurvum, clavatum, praesertim parte inferiore lateraliter compressum, apice antice rotundato-inflatum, obtusum, c. 0.36 cm. longum. Gynostemium brevissimum, crassum, truncatum, usque ad rostelli apicem bene 0.1 cm. longum,

clinandrio transverse ovali concavo, lobis stigmaticis angustis excavatis. Anthera cucullata, e basi rotundato-quadrangula leviter quadrilobulata in rostrum longiusculum triangulum acutum convexum producta, bene 0.1 cm. longa. Pollinia 4, oblique obovata, extus convexa, intus plana, c. 0.03 cm. longa, stipite spathulato, e basi tenuissima in laminam late rhombeam rotundatam dilatato, c. 0.1 cm. longo, glandula angusta. Rostellum antice in lacinias 2 porrectas falcato-triangulas carnosulas partitum. Ovarium 6-sulcatum, c. 0.55 cm. longum.

Dutch New-Guinea: In the northern part, Mamberamo, Pionier-bivouac, 20 m. (A. C. TH. THOMSEN n. 808, August 1914; "yellow").

Very near *T. toranum* J. J. S. but the flowers are much smaller, the lip comparatively broader and provided with 2 calli at the base, the anther very different and the stipes thinner. More flowers should be compared.

With *T. tamianum* J. J. S. it has in common the basal calli of the lip but is a. o. distinguished by the three-lobed lip.

In the note under *T. platyrhizum* Schltr. (Orch. D. N. Guinea 1036) SCHLECHTER suggests that *T. fimbriatum* J. J. S. may be identical with *T. platyrhizum* Schltr. (sphalm. *T. platyrhachys* Schltr.). *T. fimbriatum* J. J. S. belongs, however, to the section *Rhynchanthera* aud *T. platyrhizum* Schltr. to *Trachylepus*.

Description from a single specimen preserved in alcohol.

Sect. Trachylepus.

Taeniophyllum canaliculatum J. J. S. n. sp.

Tab. LXXXVII, 145.

Caulis abbreviatus, squamis imbricatis subulatis, radicibus tenuibus, compressis vel subteretibus, ad c. 13 cm. longis, 0.1—0.16 cm. latis. Inflorescentiae pluri(multi?)-florae, pedunculo c. 7.5 cm. longo, setoso-muriculato, vaginulis c. 3 donato, rachide flexuosa setoso-muriculata, internodiis c. 0.15 cm. longis. Bracteae alternatim bifariae, parvae, breviter triangulae, obtusae, apiculatae, concavae, dorso muriculatae, c. 0.08 cm. longae. Flores mediocres, toti c. 1.7 cm. longi. Sepalum dorsale lanceolatum, apice subacutum fere cucullatum, leviter concavum, 3-nervium, c. 0.74 cm. longum, 0.15 cm. latum. Sepala lateralia oblique lineari-lanceolata, obtusiuscula, leviter concava, dorso leviter incrassata, 3-nervia, c. 0.74 cm. longa, 0.15 cm. lata. Petala oblique lanceolata, acuta, leviter concava, more sepalorum leviter carnosula, 3-nervia, c. 0.64 cm. longa, 0.15 cm. lata. Labellum calcaratum, totum c. 1.7 cm. longum, lamina concava, apice recurvula, triloba, subtus convexa, parte mediana carnoso-incrassata, parte inferiore canaliculo longitudinali costis acutangulis supra basin dentem gerentibus limitato instructa, 5-nervia, nervis exterioribus basi furcatis, explanata ovata, subacuminata, c. 0.6 cm., usque ad apicem loborum lateralium 0.45 cm. longa, 0.4 cm. lata; lobi laterales erecti, basi lati, leviter rotundati, apice libero porrecti, paralleli, carnosi, lateraliter compressi, anguste trianguli, vix 0.05 cm. longi; lobus intermedius porrectus, recurvulus, conduplicatus, marginibus fere a medio laminae incrassatis postice divergentibus superne conduplicato-contiguis et canaliculum formantibus apice in apiculum lateraliter compressum carnosum a latere visum triangulum connatis, c. 0.23 cm. longus; calcar reversum, cum ovario angulum acutum faciens, elongatum, leviter recurvulum, clavatum, leviter lateraliter compressum, obtusum, c. 1.1 cm. longum. Gynostemium breve, crassum, dorso convexum, antice visum trilobum, usque ad apicem rostelli 0.23 cm. longum,

clinandrio valde excavato suborbiculari, lobis stigmaticis multo minoribus, suborbicularibus, concavis, extus convexis. Pollinia 4, incumbentia, cum stipite spathulato hyalino et glandula conspicua ovali bene 0.2 cm. longa. Rostellum porrectum, in lacinias 2 verticales porrectas lateraliter compressas subulatas falcatas partitum. Ovarium 6-sulcatum, in sulcis breviter tenuiterque muriculatum, cum pedicello c. 0.275 cm. longum.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., epiphytical in nearly flat swampy moss-grown forest. (H. J. LAM nrs. 1458 and 1513, 3 and 5 October 1920; "roots light green, flowers white, ovary light green").

The nearest allies are *T. brunnescens* Schltr. and *T. macrotaenium* Schltr. from which it is to be distinguished by the floral characters.

Description from materials preserved in alcohol.

Taeniophyllum stipulaceum J. J. S. n. sp.

Tab. LXXXVII, 146.

Caulis abbreviatus, squamis subulatis, radicibus elongatis, repentibus, applanatis, usque ad 34 cm. longis, sicco 0.125—0.2 cm. latis. Inflorescentiae satis longae, diu flores gignentes, dense multiflorae, pedunculo tenui, verrucoso, c. 11 cm. longo, nonnullis vaginulis tubulosis donato, rachide incrassata, 11 cm. superante, internodiis c. 0.05 cm. longis. Bracteae alternatim bifariae, patentes, triangulae, concavae, carinatae, lateraliter compresso-subulato-productae, acutae, parce muriculatae, basi utrinque appendice stipuliformi rachidi adpressa subulata muriculata instructae. Flores singuli expansi, mediocres, toti c. 1.25 cm. longi, sepalis patentissimis. Sepalum dorsale oblongum, obtusum, leviter concavum, superne carnosulum, glabrum, 3-nervium, c. 0.35 cm. longum, 0.14 cm. latum. Sepala lateralia oblique oblonga, obtusa, vix apiculata, dorso versus apicem carnosula, 1-nervia, superne subtrinervia, c. 0.37 cm. longa, 0.12 cm. lata. Petala porrecta, parallela, gynostemium includentia, late ovato, apice leviter triangulo-contracta, obtusa, concava, dorso convexa, carnosula, praesertim apicem versus incrassata, 3-nervia, c. 0.3 cm. longa, 0.26 cm. lata. Labellum 3-lobum, calcaratum, carnosum, inter lobos laterales conduplicatum et anguste canaliculatum, canaliculo costis 2 fere contiguis limitato, lamina explanata c. 0.25 cm. longa, 0.2 cm. lata, hypochylio transverse angulato-ovali suborbiculari, c. 0.17 cm. longo; lobi laterales erecti, angulato-semielliptici, apice antico libero brevi triangulo porrecto gynostemium superantes; lobus intermedius parvus, porrectus, carnosus, lateraliter compressus, apicem versus subtus dilatatus, supra visus triangulus, basi excavatus, a latere visus triangulus, subtus rotundatus, fere 0.1 cm. longus et altus; calcar elongatum, reversum, ovario parallelum, subrectum, clavatum, leviter lateraliter compressum, dimidio inferiore tenue, dimidio superiore inflatum, obtusum, totum c. 1 cm. longum. Gynostemium brevissimum, latum, dorso convexum, sulcis 2 longitudinalibus inter clinandrium et lobos stigmaticos 3-lobulum, c. 0.125 cm. longum, clinandrio excavato, subsemiorbiculari, lobis stigmaticis subsemiorbicularibus, alte excavatis, margine elevatis. Anthera cucullata, e basi dilatata in rostrum longum lineari-oblongum medio fere obtusangule recurvulum acutum producta, c. 0.075 cm. lata. Pollinia 4, $^1/_4$ globosa, stipite spathulato, apice duplicato-cyathiformi, c. 0.1 cm. longo, glandula longissima, tenui, anguste lineari-subulata. Rostellum submalleiforme, postice in subulam acatam productum, parte antica in lacinias 2 breviusculas obtusas partita. Ovarium 6-sulcatum, in

sulcis patenter erecto-patenterque muriculatum, c. 0.4 cm. longum; pedicellus parce muriculatus, c. 0.2 cm. longus.

Dutch New-Guinea: In the northern part, ridge to Doorman-top, 1420 m., low moss-grown *Vaccinium*-forest, epiphytical. (H. J. LAM n. 1439, 1 October 1920; "roots green, whitish beneath, peduncle greenish yellow, bracts green, bud yellowish white"; n. 1514 (type), 5 October 1920; "peduncle rather dark yellowish green, flowers yellow, spur light yellow, column greenish yellow, ovary yellowish green").

This species is a near ally of *T. brunnescens* Schltr., *T. latipetalum* Schltr., *T. quaquaversum* Schltr., *T. clavatum* Schltr., *T. robustum* Schltr. and *T. clavicalcar* J. J. S., from which it differs in the shape of the flower-segments.

These species have been described with a spiral inflorescence in contradistinction to all other species of the genus which possess distichous inflorescences. I have stated, however, in *T. stipulaceum* that there are really but two rows of bracts, bearing at both sides of their base a stipule-like appendage which superficially looked at may be taken for bracts. I suppose that the other species in question do not differ in this respect.

Description from herbarium and an inflorescence with one flower preserved in alcohol.

Utrecht, December 1926.

CORRIGENDA.

Vrydagzynea Bl.

When determining a number of species of the above genus from New-Guinea some time ago, it drew my attention that there must be something wrong regarding the nomenclature and therefore I wrote to Dr. R. MANSFELD at Berlin about the matter. This gentleman suggested that I might try myself to clear up the matter, enabling me at the same time to it by kindly forwarding the material of the species in question of the Berlin Museum.

An examination told me that in fact the matter was more intricate than I had imagined. It referred to the species *V. elongata* Bl., *V. Schumanniana* Krzl., *V. pachyceras* Schltr., *V. rivularis* Schltr., *V. novaguineensis* J. J. S. (*V. papuana* Schltr.), *V. triloba* J. J. S., *V. paludosa* J. J. S. and *V. discolabris* J. J. S.

V. Schumanniana Krzl. was based on WEINLAND n. 252. In the year 1914 I came in the Leiden Herbarium across a duplicate of this number, which was received from the Berlin Herbarium with the name *Goodyera*. Relying on the number — the description being rather insufficient — I determined this material as *V. Schumanniana* Krzl. and in accordance with it also all the similar specimens which I got sight of later on. From the material lent me by the Berlin Museum it was apparent that the specimens of WEINLAND n. 252, on which KRÄNZLIN based his species, are quite different from the duplicate at Leiden. The latter tallies exactly with *V. rivularis* Schltr. and *V. paludosa* J. J. S., the latter being consequently the oldest name name of the species.

SCHLECHTER united *V. triloba* J. J. S. with *V. Schumanniana* Krzl. which may be correct.

It is not so easy to decide about the real character of *V. novaguineensis* J. J. S. (*V. papuana* Schltr.). The species was based on SCHLTR. n. 13941, of which the two specimens at hand only commence to flower. I even suppose that SCHLECHTER's description and analytic drawing, which is added to the herbarium, have been made after an unopened flower. Afterwards SCHLECHTER identified his n. 17188 with the said species notwithstanding the many differences, which are to be seen in the analytic sketch which he made of it and published in his Figuren-Atlas. As to their habit the plants are rather similar and the differences perhaps explainable from the imperfect development of the flowers of n. 13941. In my opinion it may be best for the present to cling to the published drawing. *V. discolabris* J. J. S. belongs here.

Finally *V. pachyceras* Schltr. should in my opinion be united with *V. elongata* Bl.

Vrydagzynea novaguineensis J. J. S. in Nova Guinea VIII (1909), 13. — *V. papuana* Schltr. in Nachtr. Fl. D. Schutzg. Südsee (1905), 85. — *V. discolabris* J. J. S. l. c. XIV (1929), 343, t. XLIII, 7.

Dutch New-Guinea: In the northern part, Mamberamo, bivouac near the Edi-falls, 40 m. (H. J. LAM n. 776!, 9 August 1920).

Papua: Bismarck-mountains, c. 700 m. (R. SCHLECHTER, n. 13941!, 12 January 1902). Kaulo-etappe, c. 300 m. (R. SCHLECHTER n. 17188!, 12 January 1908).

The species is characterized by the short dense spike, the dorsal sepal contracted in its upper third portion, the much thickened lateral sepals, the petals broadened to a distinct lobe on the inner margin above the middle, a slightly trilobate lip with a straight blunt spur and globular glands not reaching the top.

Vrydagzynea Schumanniana Krzl. (nec J. J. S.) in Fl. D. Schutzgeb. Südsee (1905), 86; Schltr. Orch. D. N. Guinea (1911), 87; Figuren-Atlas Heft 2 (1925), t. XXXV, n. 120. — ? *V. triloba* J. J. S. in Nova Guinea VIII (1909), 13, t. IV, 12; XII (1913), 8.

Dutch New-Guinea: In the southern part, Noord-river, between Zandvoort and Sabang. (G. M. VERSTEEG, n. 1244!, 17 June 1907). ? East of Alkmaar. (G. M. VERSTEEG n. 1590!, 9 August 1907).

Papua: Kaiser Wilhelmsland, upper Bubui. (K. WEINLAND n. 252 p.p.!, June 1890). Mountains near Jaduna. (R. SCHLECHTER n. 17381!, 8 March 1908, c. 100 m.; n. 19235!, 14 April 1909, c. 200 m.).

This species has an elongate, loose inflorescence. The upper sepal is contracted in the upper portion (of $^1/_3$–$^2/_5$) and the lateral sepals are strongly thickened. The petals have a wide base but are not broadened to a lobe like in *V. novaguineensis*. The lip is distinctly three-lobed with the spur at the top distinctly and rather abruptly contracted and more or less bent backwards, showing in this way at the back under the top a kind of hump; the glands get loose about in the middle but don't reach the top at all.

Vrydagzynea paludosa J. J. S. in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 39; in Nova Guinea VIII (1909), 12, t. IV, 11. — *V. elongata* Schltr. (p.p., nec Bl.) in Nachtr. Fl. D. Schutzgeb. Südsee (1905), 84. — *V. rivularis* Schltr. Orch. D. N. Guinea (1911), 85. — *V. Schumanniana* J. J. S. (nec Krzl.) in N. Guinea XII (1915), 190; XIV (1929), 344.

Dutch New-Guinea: In the southern part, Noord-river. (G. M. VERSTEEG n. 1244!, 15 June 1907; DJIBAJA liv. pl. cult. in Hort. Bog. sub nrs. 101! and 104!). East of Kloof-bivouac, 30 m. (A. PULLE n. 173!, 18 October 1912).

In the northern part, Gautier-mountains, northern slope, Tor-river, c. 400 m. (K. GJELLERUP n. 877!, 6 November 1911). Idenburg-river, 125 m. (W. FEUILLETAU DE BRUYN nrs. 108! and 115!, 14 September 1914).

Papua: Kaiser Wilhelmsland, Upper Bubui. (K. WEINLAND n. 252 p.p.!, June 1890). Lower Mojo-valley. (Dr. WERNER n. 44!, June 1907). Toricelli-mountains. (R. SCHLECHTER n. 14592!, 30 April 1902, 100 m ; n. 20342!, 23 September 1909, 800 m.). Wobbe, c. 300 m. (R. SCHLECHTER n. 16335!, 30 July 1907). On the Njonge near Ambo. (R. SCHLECHTER n. 18126!, 31 August 1908, 600 m.; n. 19043!, 9 January 1909, 500 m.). Finisterre-mountains, c. 700 m. (R. SCHLECHTER n. 19083!, 13 January 1909).

Distinguished from the other species by the narrow leaves. The inflorescence is loose and commonly pauciflorous, but every now and then strong specimens turn up with a much

greater number of flowers. The flowers, especially the spurs are much like those of *V. Schumanniana*, but the upper sepal is more contracted, and the glands of the spur never reach beyond the middle.

Vrydagzynea elongata Bl. Fl. Jav. n. s. I (1858), 61, t. 28, fig. 1; Schltr. in Nachtr. Fl. D. Schutzgeb. Südsee (1905), 84 (p.p.) — *V. pachyceras* Schltr. l. c. — *V. rectangulata* J. J. S. in Bull. Jard. Bot. Buitenz. 2e sér. XIII (1914), 54. — *Hetaeria elongata* Miq. Fl. Ind. Bat. III (1859), 726.

Dutch New-Guinea: In the south-west part, Triton Bay. (LE GUILLOU!, 1841).

In the northern part, Naumoni, 75 m. (M. MOSKOWSKI n. 384!, October 1910). Temenimbor, Tor-river, c. 75 m. (K. GJELLERUP n. 787!, October 1911). Armopa (Bonggo). (R. F. JANOWSKY n. 632!, January 1914). Otken-river, 26 m. (A. C. TH. THOMSEN n. 675!, 6 April 1914). Behind campong Roon. (L. S. GIBBS n. 6240!, January 1914). Meervlakte, Mamberamo near Prauwen-bivouac, 90 m. (H. J. LAM nrs. 1116! and 1130!, September 1920).

Papua: Kaiser Wilhelmsland, Markham-river. (K. WEINLAND nrs. 175! and 203!, 1890). Huon Bay, Cape Ankona. (C. LAUTERBACH n. 644!, 2 August 1890). Port Erima. (R. SCHLECHTER n. 13680!, 18 October 1901). Bismarck-mountains, 500 m. (R. SCHLECHTER n. 14039!, January 1902). Wobbe, 180 m. (R. SCHLECHTER n. 16420!, 28 August 1907). Bivouac Malu on the Sepik, 30—40 m. (C. LEDERMANN n. 10462!, 6 January 1913).

This species has, at least after the effect of the fertilization, a lengthened spike. The flowers are at once recognizable from their smallness and the fact, that the sepals and the limb of the lip make about a right angle with the spur. The lateral sepals are much less thickened than in the above species. The petals are much narrowed toward the base and cuneate. The lip has distinct side lobes and a straight nearly cylindric blunt or somewhat retuse spur.

As to the shape of the leaves there seem to occur two forms, viz. with nearly symmetric and with more or less oblique leaves but in the flowers I failed to detect distinguishing characters. In SCHLECHTER n. 13680 both forms are represented on the same sheet.

SCHLTR. n. 14039 is not very typical, although I did not find any difference in the examined flower. One of the specimens is out of its place here and possibly identic with *V. novaguineensis*. SCHLECHTER's sketch within this sheet may be drawn after this specimen.

MOSKOWSKY n. 384 and LEDERMANN n. 10462, both determined by SCHLECHTER as *V. novaguineensis* J. J. S. and WEINLAND n. 175 (173?), named by this author *V. Schumanniana* Krzl., undoubtedly belong to the species, which I look upon as *V. elongata* Bl.

Oegstgeest, January 1929.

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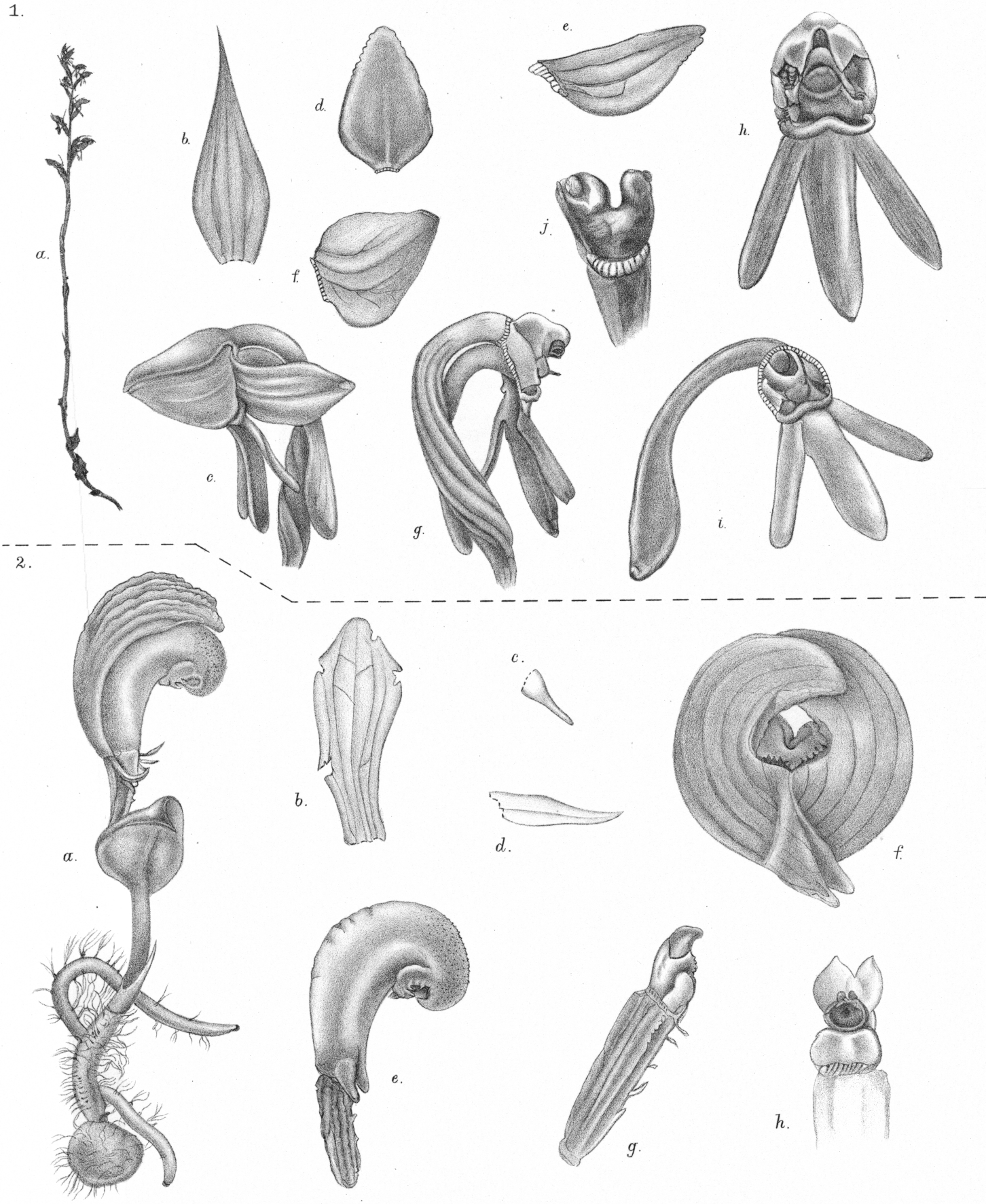
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Saccolabium Bl.
palustre J. J. S. 498.
Sarcanthus Lndl.
bicornis J. J. S. 496.
decurvicalcar J. J. S. 496, t. LXXXIII, 135.
Sarcochilus B. Br.
Moorei Schltr. 493.
singularis J. J. S. 493.
Schoenorchis Bl.
plebeja J. J. S. 496.
Spathoglottis Bl.
aurea J. J. S. 356.
elobulata J. J. S. 354, t. XLVI, 15.
microchilina Krzl. 356.
Wrayi Hook. f. 356.
Stereosandra Bl.
javanica Bl. var. papuana J. J. S. 342.
Taeniophyllum Bl.
canaliculatum J. J. S. 506, t. LXXXVII, 145.
cymboglossum J. J. S. 503, t. LXXXVI, 142.
manubrioliferum J. J. S. 505, t. LXXXVII, 144.
Taeniophyllum Bl.
recurvirostrum J. J. S., 504, t. LXXXVI, 143.
stipulaceum J. J. S. 507, t. LXXXVII, 146.
tamianum J. J. S. 505.
tripulvinatum J. J. S. 502, t. LXXXVI, 141.
Thelasis Bl.
carinata Bl. 492.
phreatiodes J. J. S. 492.
Thrixspermum Lour.
validum J. J. S. 493.
Trichoglottis Bl.
litoralis Schltr. 497.
Vandopsis Pfitz.
curvata J. J. S. 493.
pantherina J. J. S. 493, t. LXXXII, 133.
Vrydagzynea Bl.
discolabris J. J. S. 343, t. XLIII, 7, 510.
elongata Bl. 344, 511.
elongata Schltr. 510.
novaguineensis J. J. S. 510.
pachyceras Schltr. 511.
paludosa J. J. S. 510.
papuana Schltr. 510.
rectangulata J. J. S. 511.
rivularis Schltr. 510.
Schumanniana J. J. S. 510.
Schumanniana Krzl. 344, 510.
triloba J. J. S. 510.
Zeuxine Lndl.
amboinensis J. J. S. var. argentea J. J. S. 338.

XLI, 1. **Habenaria Lamii** J. J. S.

a. Planta florens.
b. Bractea.
c. Flos.
d. Sepalum dorsale.
e. Sepalum laterale.
f. Petalum.
g. Labellum cum gynostemio.
h. Idem, antice visum.
i. Labellum.
j. Gynostemium supra visum.

XLI, 2. **Corybas sexalatus** J. J. S.

a. Planta florens.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum a latere visum.
f. Labellum semiexplanatum.
g. Gynostemium.
h. Idem, subtus visum.


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XLII, 3. **Nervilia punctata** Schltr. var. **papuana** J. J. S.

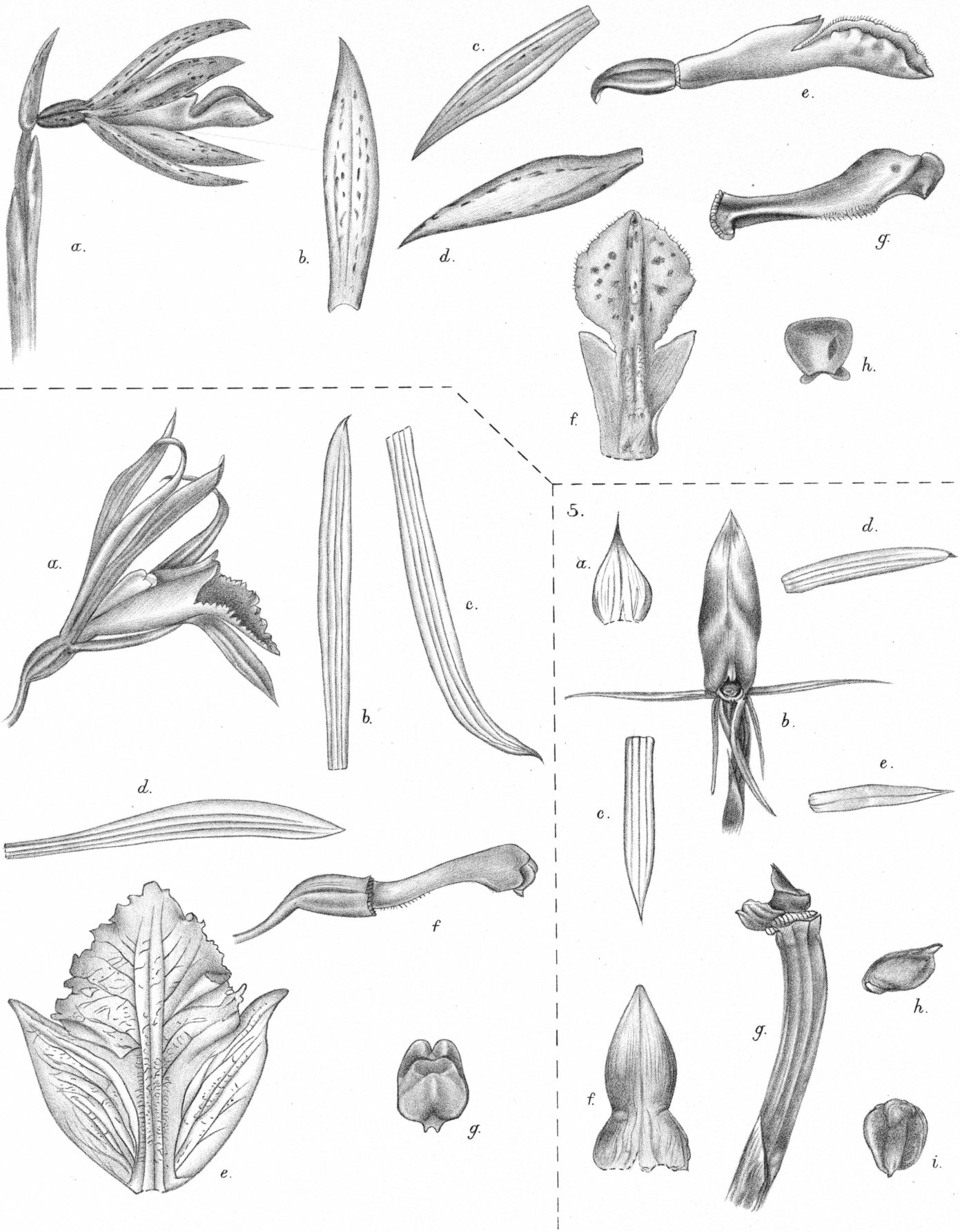
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.

XLII, 4. **Nervilia macrophylla** Schltr.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera.

XLII, 5. **Cryptostylis maculata** J. J. S.

a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera a latere visa.
i. Idem, supra visa.


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XLIII, 6. **Lecanorchis ciliolata** J. J. S.

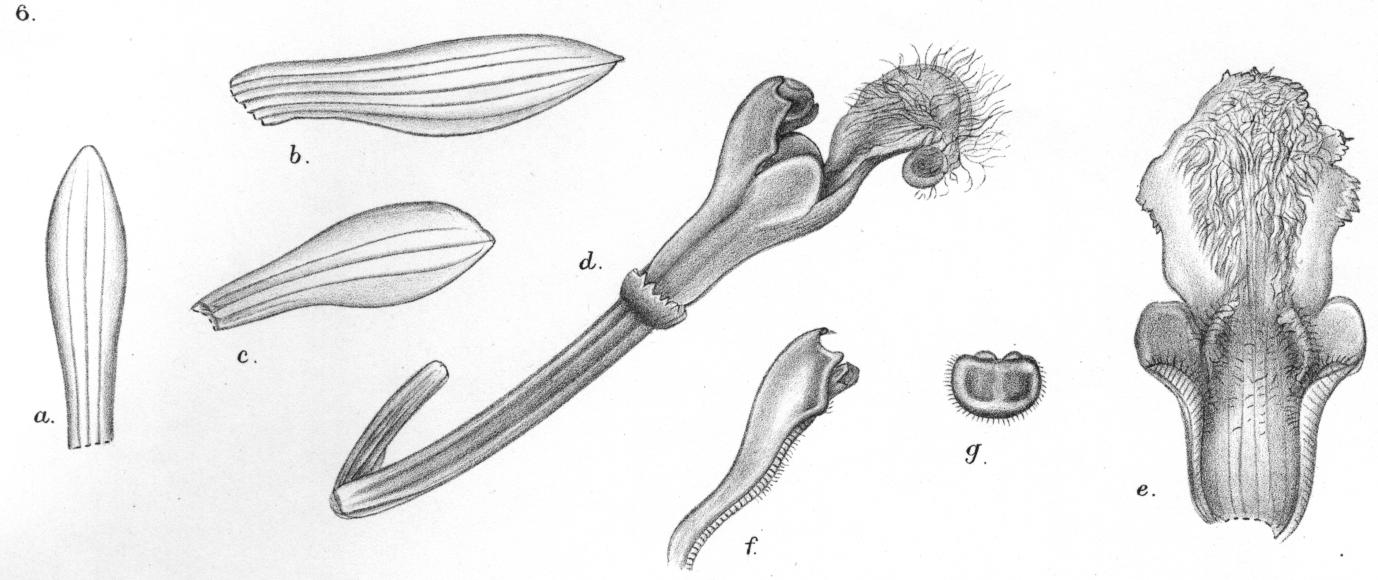
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera.

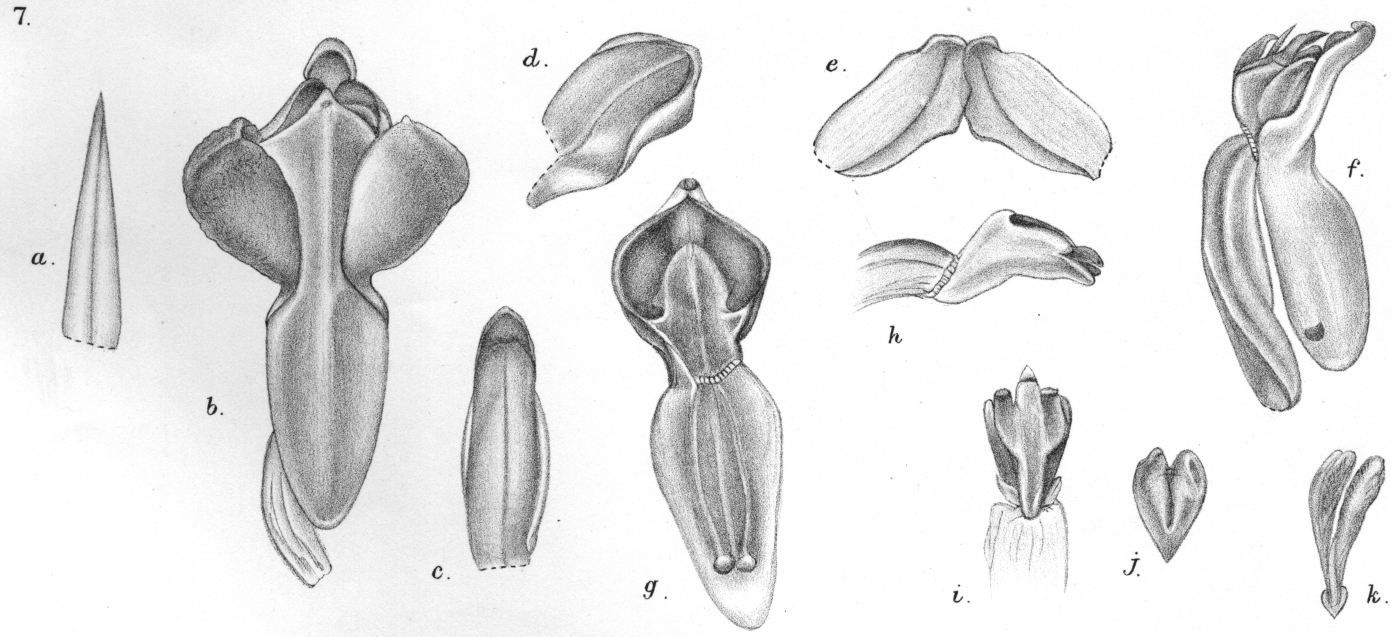
XLIII, 7. **Vrydagzynea discolabris** J. J. S.

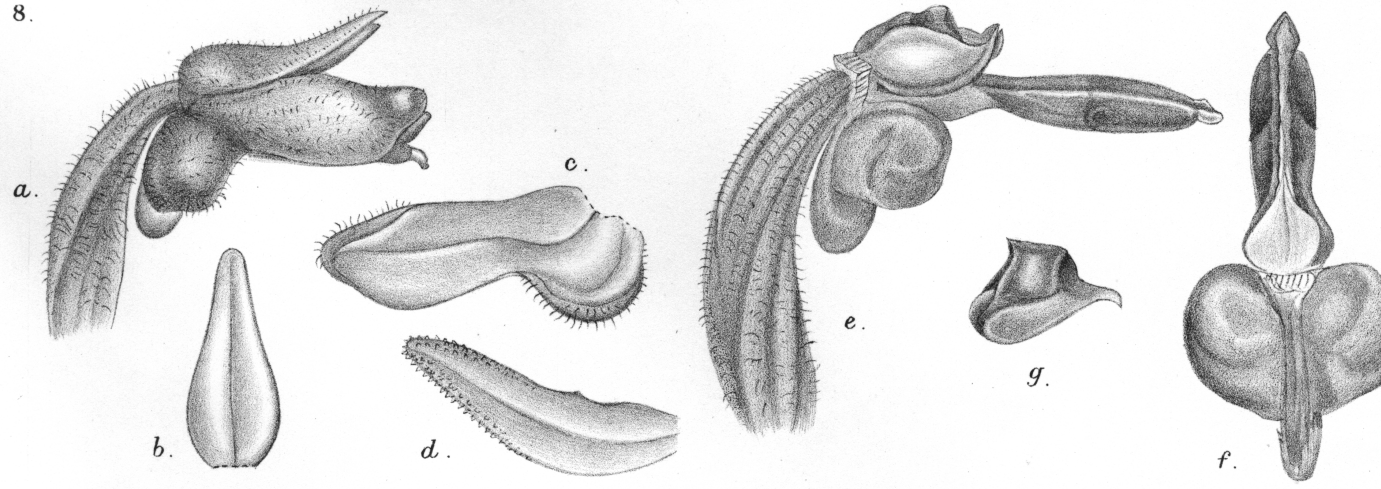
a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petala.
f. Labellum cum gynostemio.
g. Labellum.
h. Gynostemium.
i. Idem, subtus visum.
j. Anthera.
k. Pollinarium.

XLIII, 8. **Cystorchis Versteegii** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum supra visum.
g. Anthera.


6.
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8.
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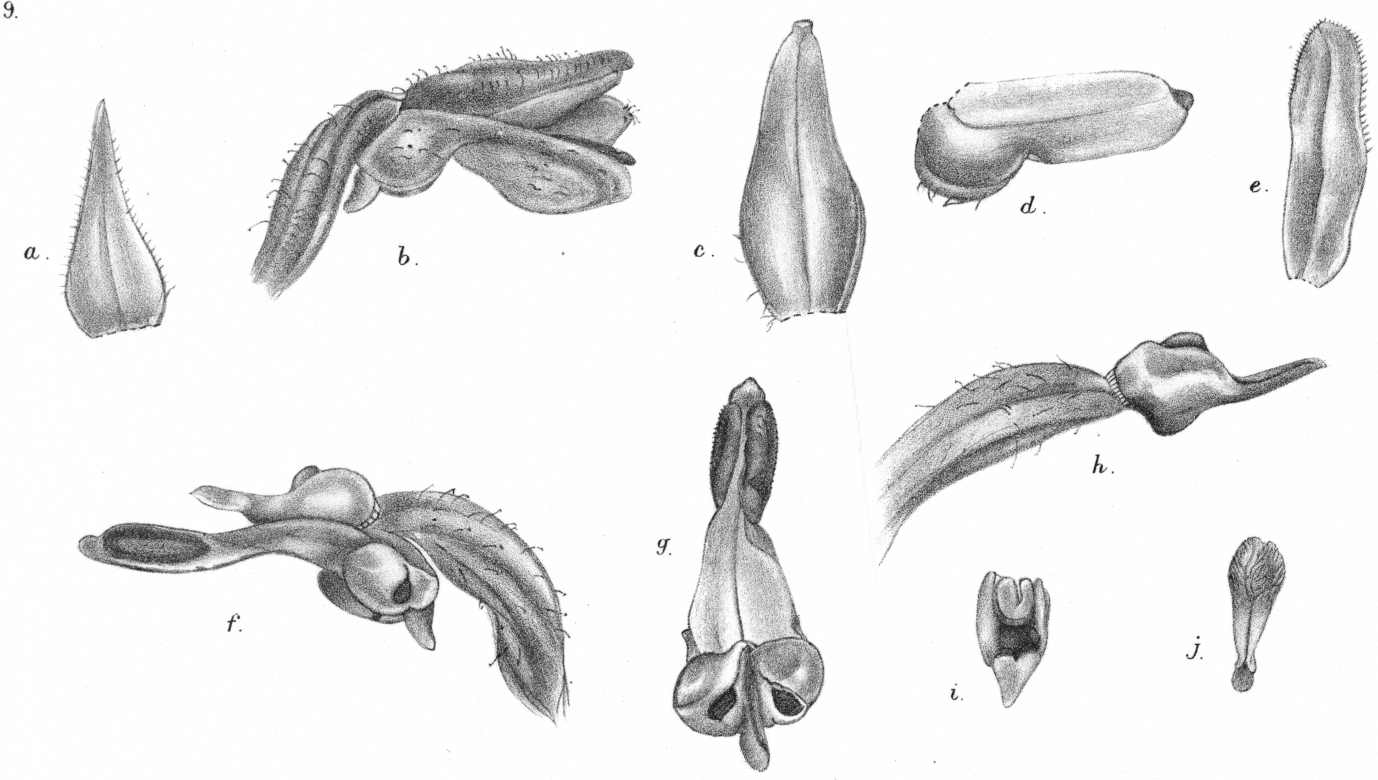
XLIV, 9. **Cystorchis rostellata** J. J. S.

a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum cum gynostemio.
g. Labellum supra visum.
h. Gynostemium.
i. Anthera.
j. Pollinarium.

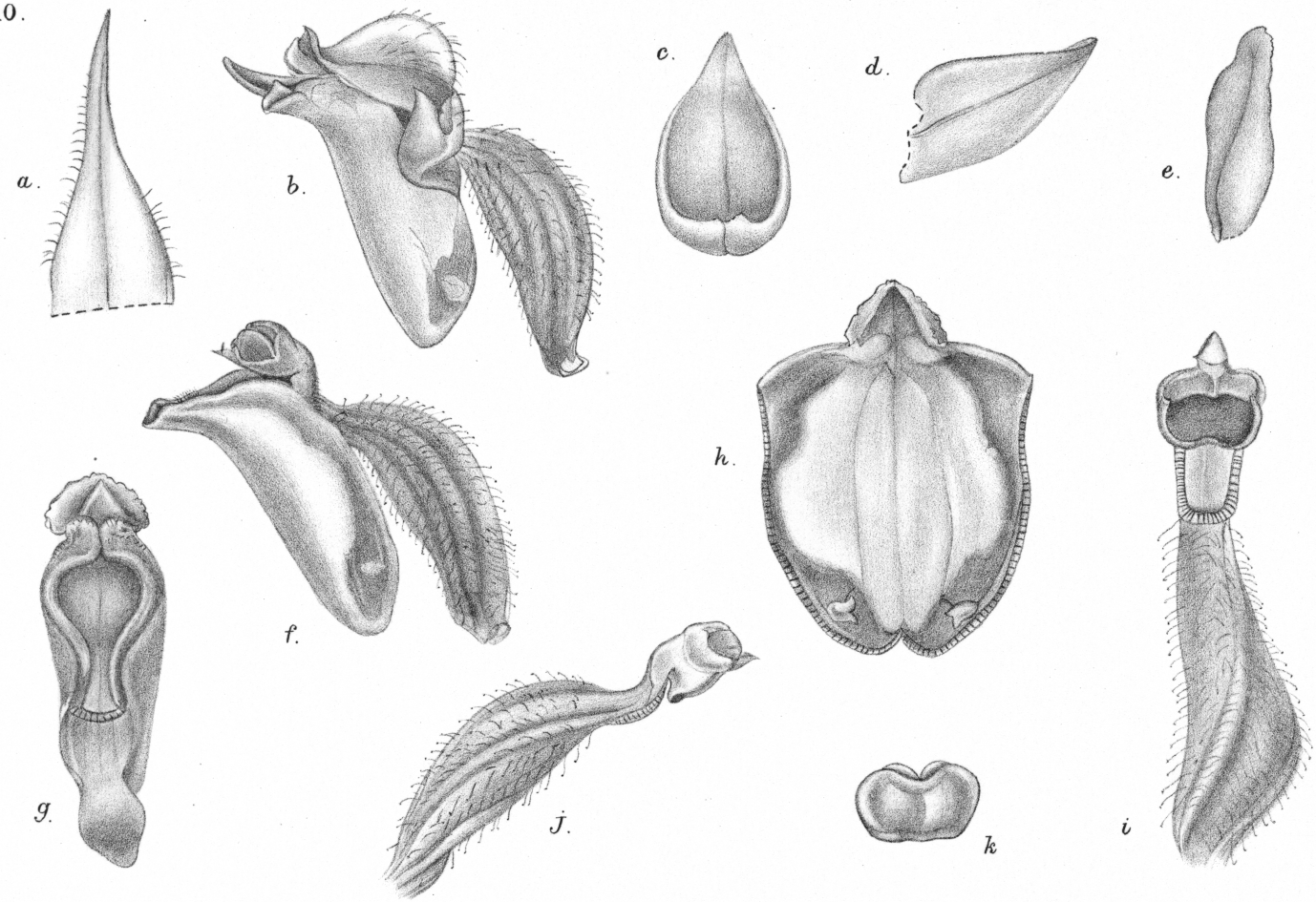
XLIV, 10. **Eurycentrum atroviride** J. J. S.

a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum cum gynostemio.
g. Labellum supra visum.
h. Idem, sectum et explanatum.
i. Gynostemium subtus visum.
j. Idem, a latere visum.
k. Anthera.

9.



10.



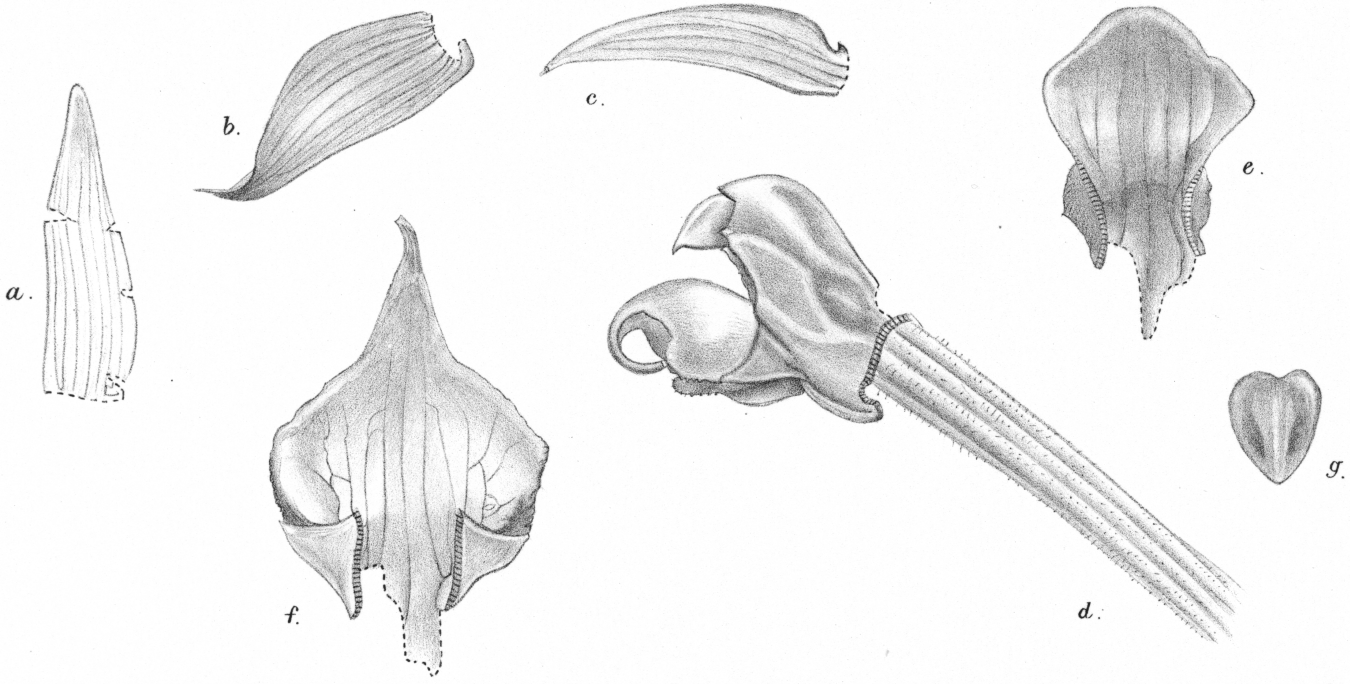
XLV, 11. **Plocoglottis longicuspis** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum supra visum.
f. Idem, explanatum.
g. Anthera.

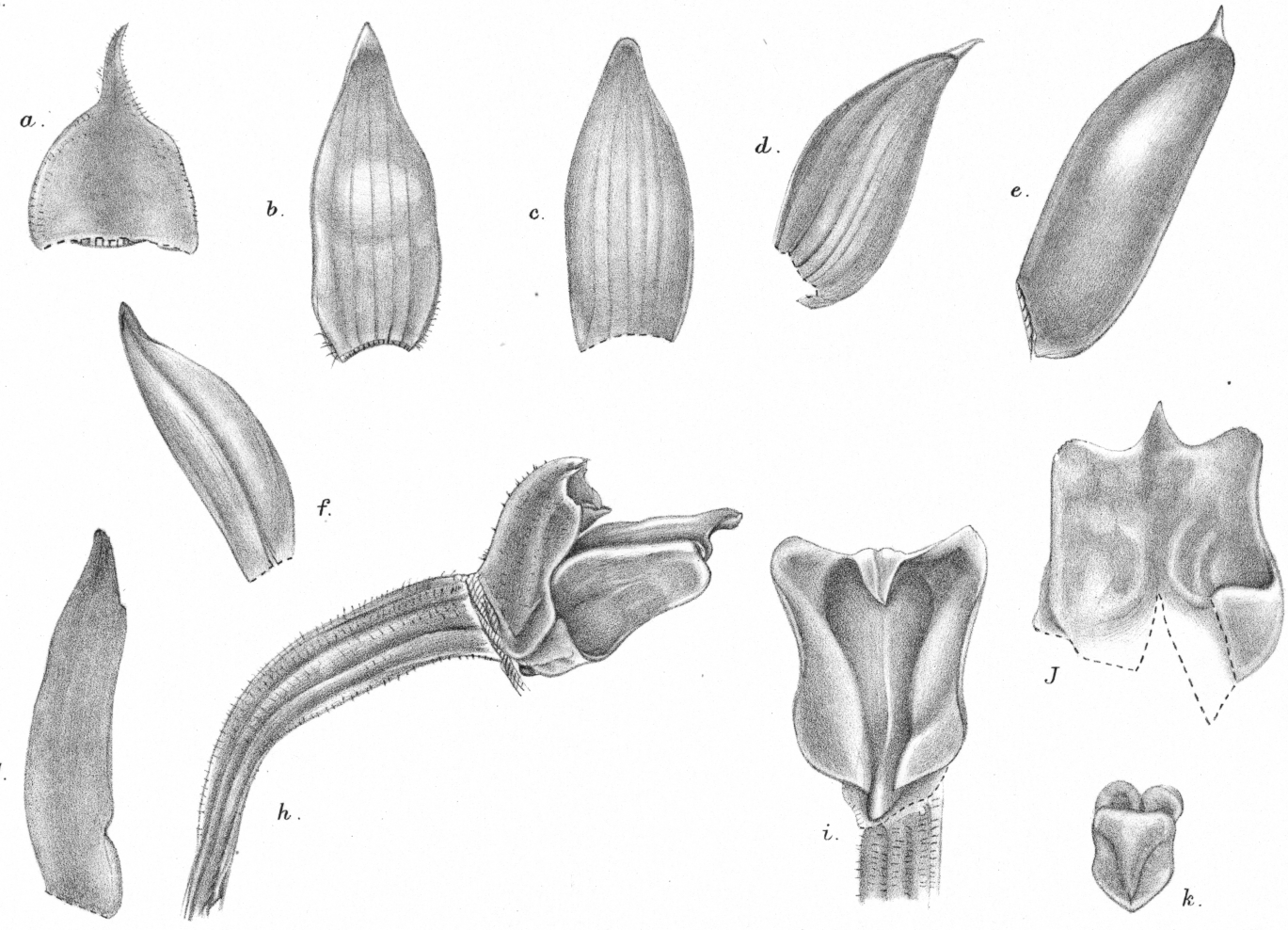
XLV, 12. **Plocoglottis mamberamensis** J. J. S.

a. Bractea.
b. Sepalum dorsale (e spiritu vini).
c. Idem (maceratum).
d. Sepalum laterale (e spiritu vini).
e. Idem (maceratum).
f. Petalum (e spiritu vini).
g. Idem (maceratum).
h. Labellum cum gynostemio.
i. Labellum subtus visum.
j. Labellum explanatum.
k. Anthera (e spiritu vini).

11.



12.



XLVI, 13. **Plocoglottis sororia** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum supra visum.
f. Idem, explanatum.

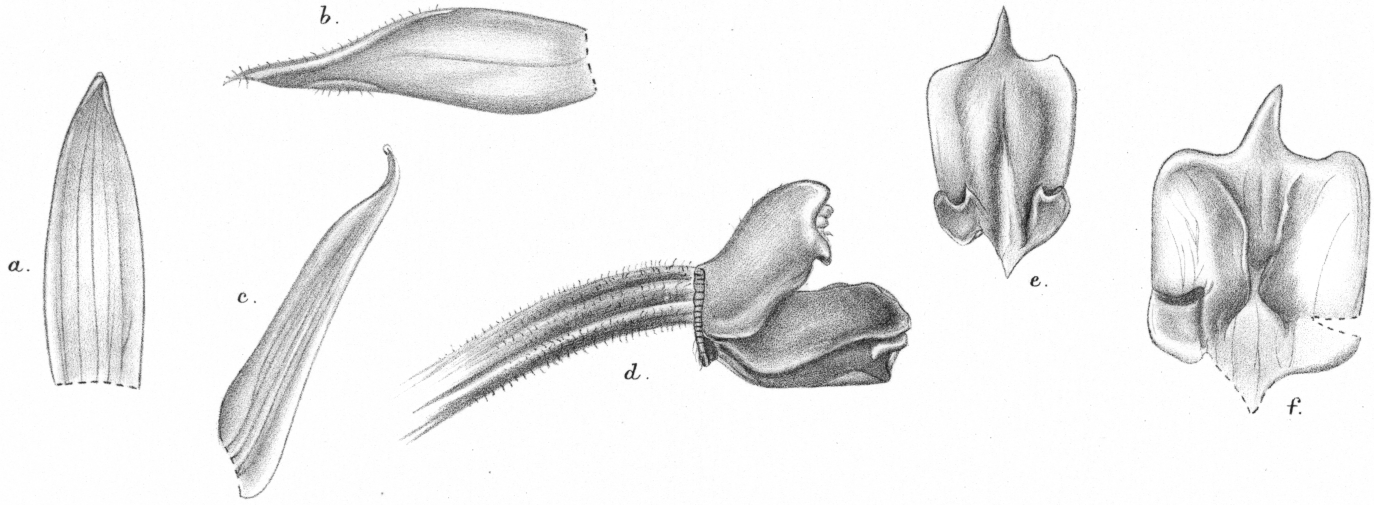
XLVI, 14. **Plocoglottis tropidiifolia** J. J. S.

a. Sepalum dorsale.
b, *c*. Sepala lateralia.
d, *e*. Petala.
f. Labellum et gynostemium.
g. Labellum explanatum.
h. Anthera.

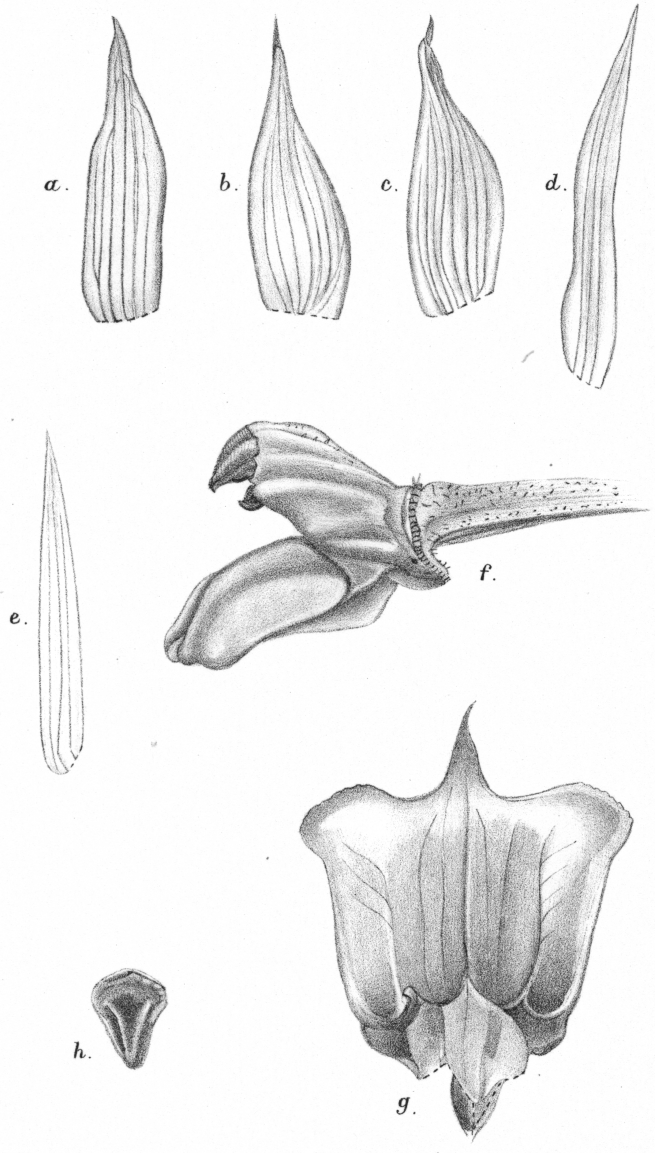
XLVI, 15. **Spathoglottis elobulata** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Anthera.

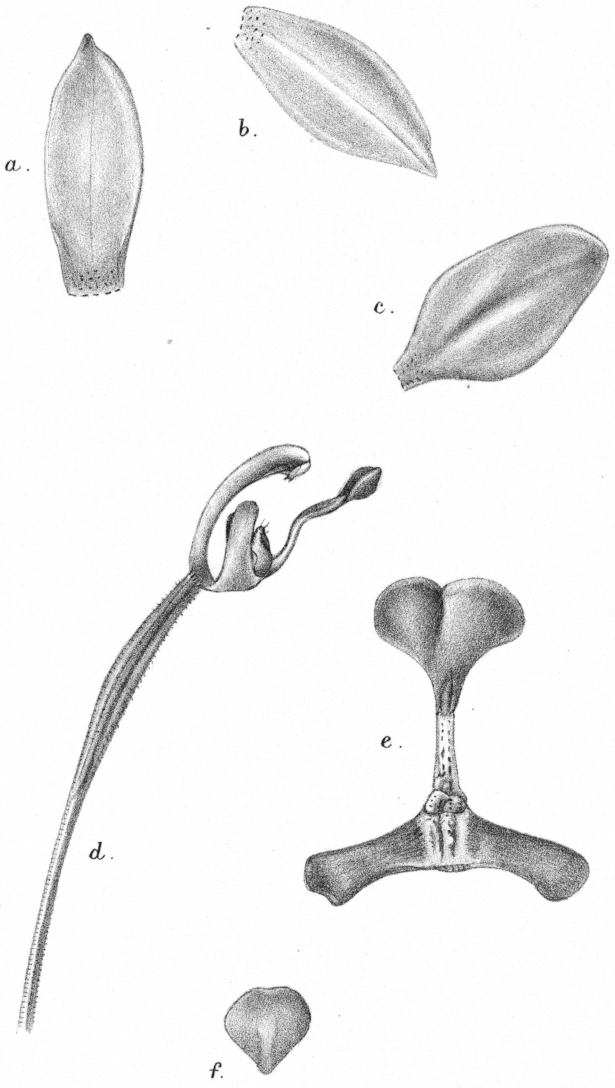
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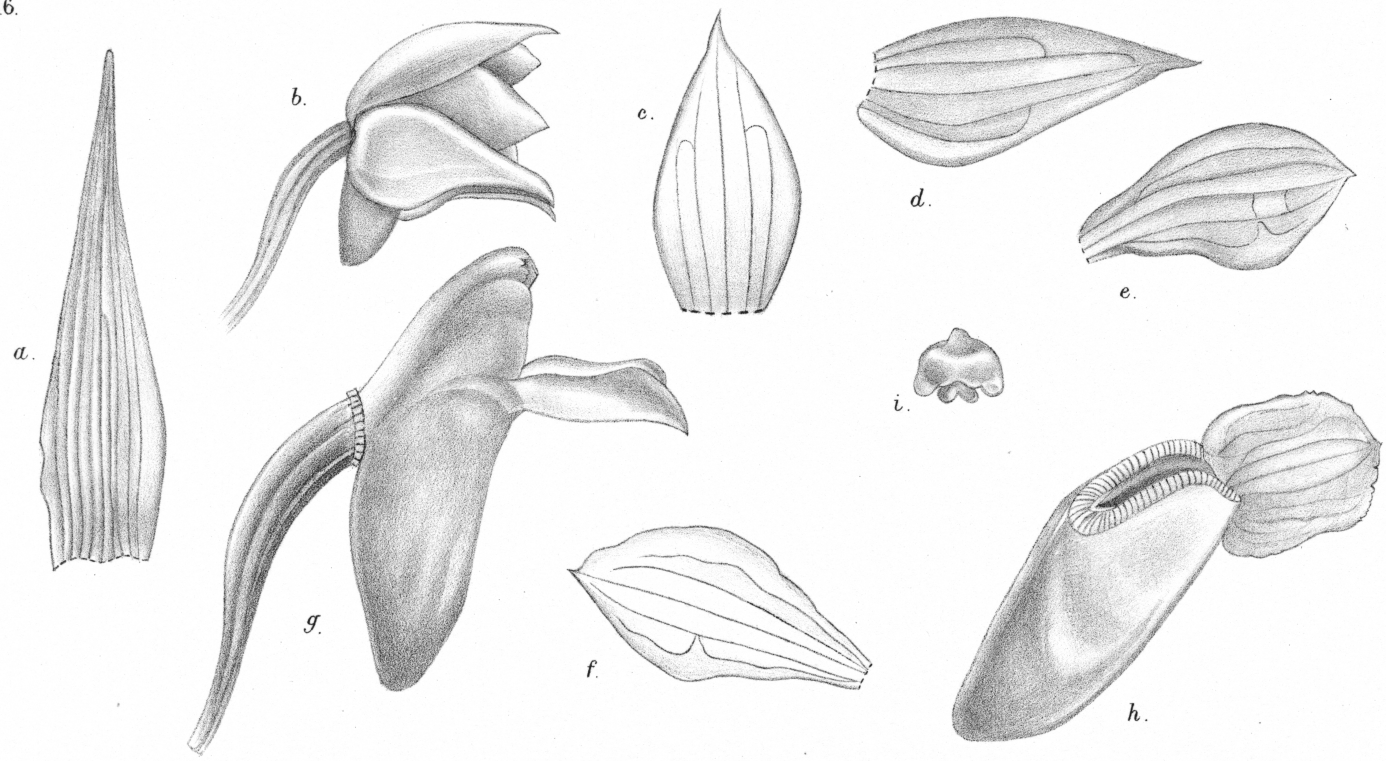
XLVII, 16. **Calanthe arundinoides** J. J. S.

a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e, *f.* Petala.
g. Labellum cum gynostemio.
h. Labellum.
i. Anthera.

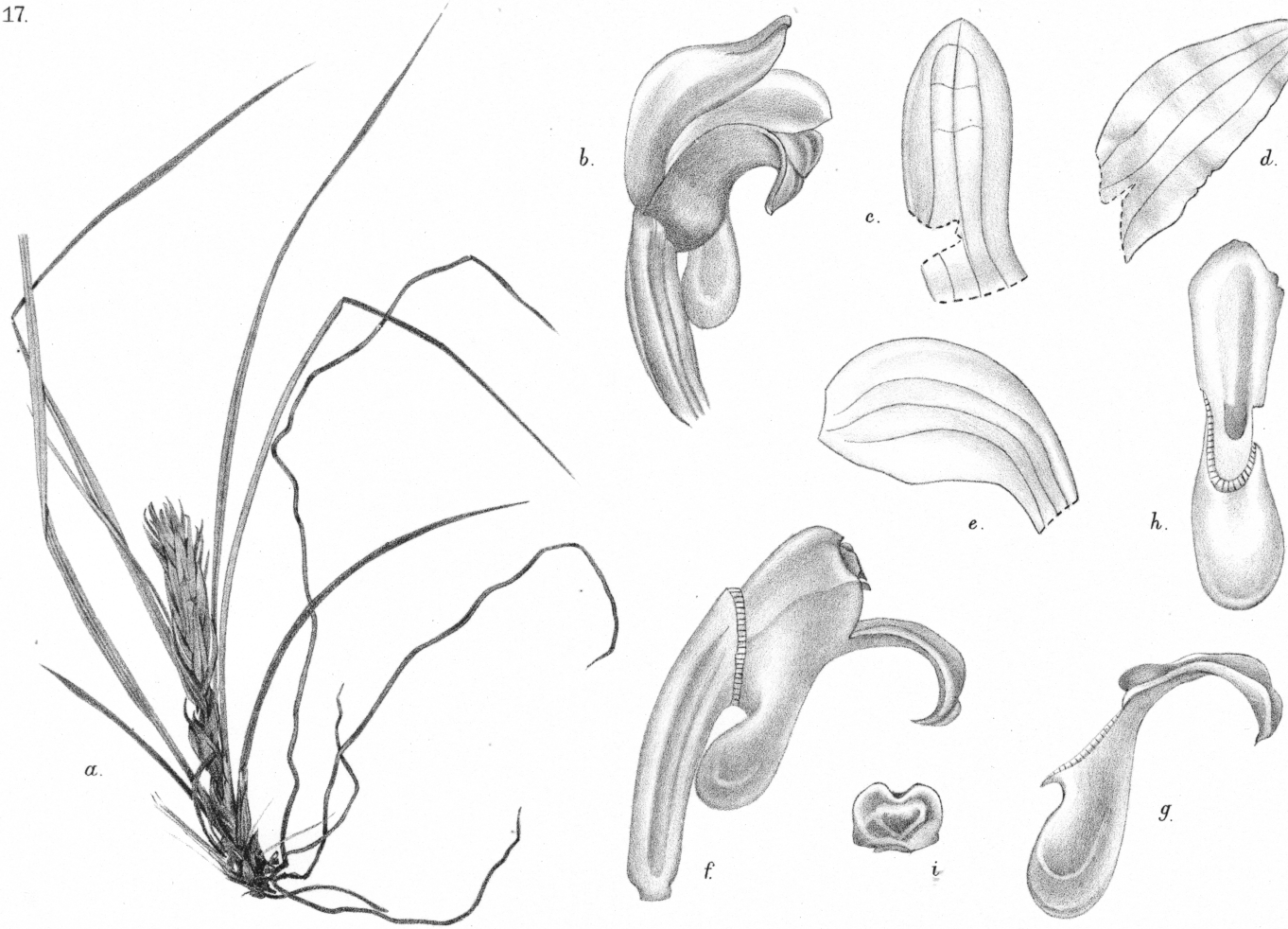
XLVII, 17. **Calanthe Manis** J. J. S.

a. Planta florens.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
f. Labellum cum gynostemio.
g. Labellum a latere visum.
h. Idem, supra visum.
i. Anthera.

16.



17.



XLVIII, 18. **Calanthe leucosceptrum** Schltr. var. **bisubulifera** J. J. S.

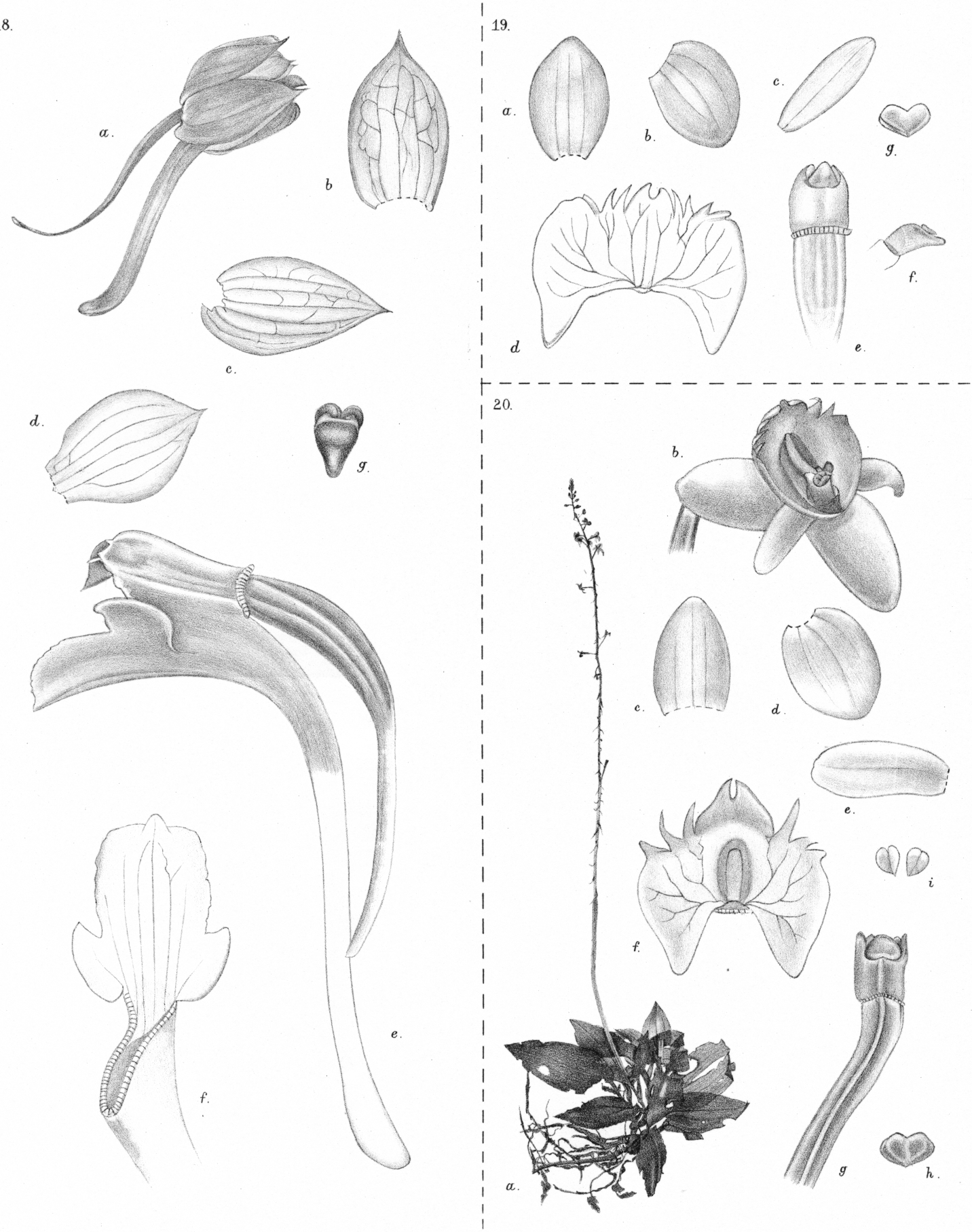
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labelli lamina explanata.
g. Anthera.

XLVIII, 19. **Microstylis lata** J. J. S.

a. Sepalum dorsale.
b. Sepalam laterale.
c. Petalum.
d. Labellum explanatum.
e. Gynostemium supra visum.
f. Idem, a latera visum.

XLVIII, 20. **Microstylis Lamii** J. J. S.

a. Planta florens.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Pollinia.


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XLIX, 21. **Microstylis Floscularia** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum explanatum.
e. Gynostemium.
f. Anthera.
g. Pollinia.

XLIX, 22. **Oberonia Thomsenii** J. J. S.

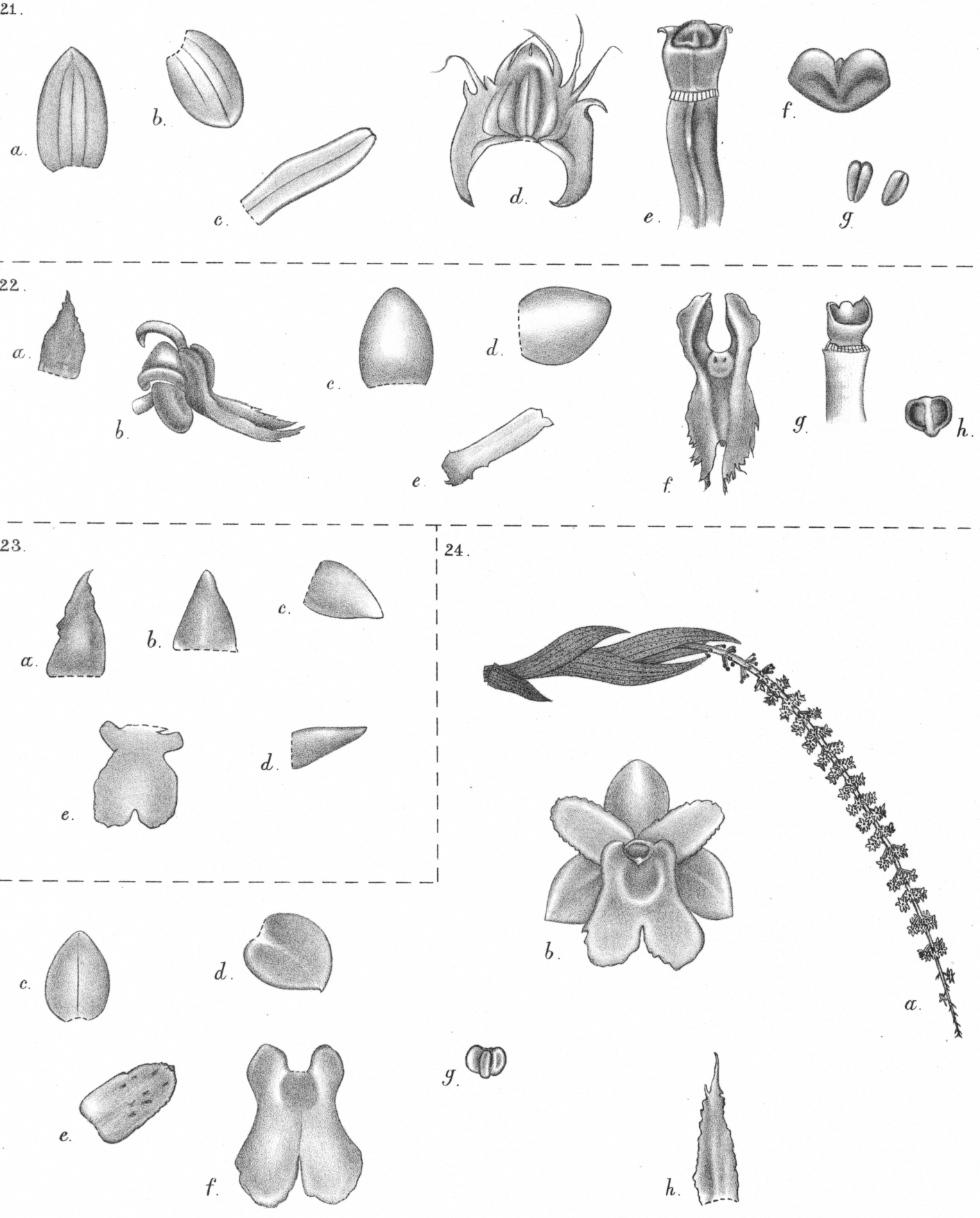
a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum.
g. Gynostemium.
h. Anthera.

XLIX, 23. **Oberonia serpentinicaulis** J. J. S.

a. Bractea.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum explanatum.

XLIX, 24. **Oberonia wappeana** J. J. S.

a. Caulis florens.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum explanatum.
g. Anthera.
h. Bractea.


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L, 25. **Hippeophyllum biakense** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.

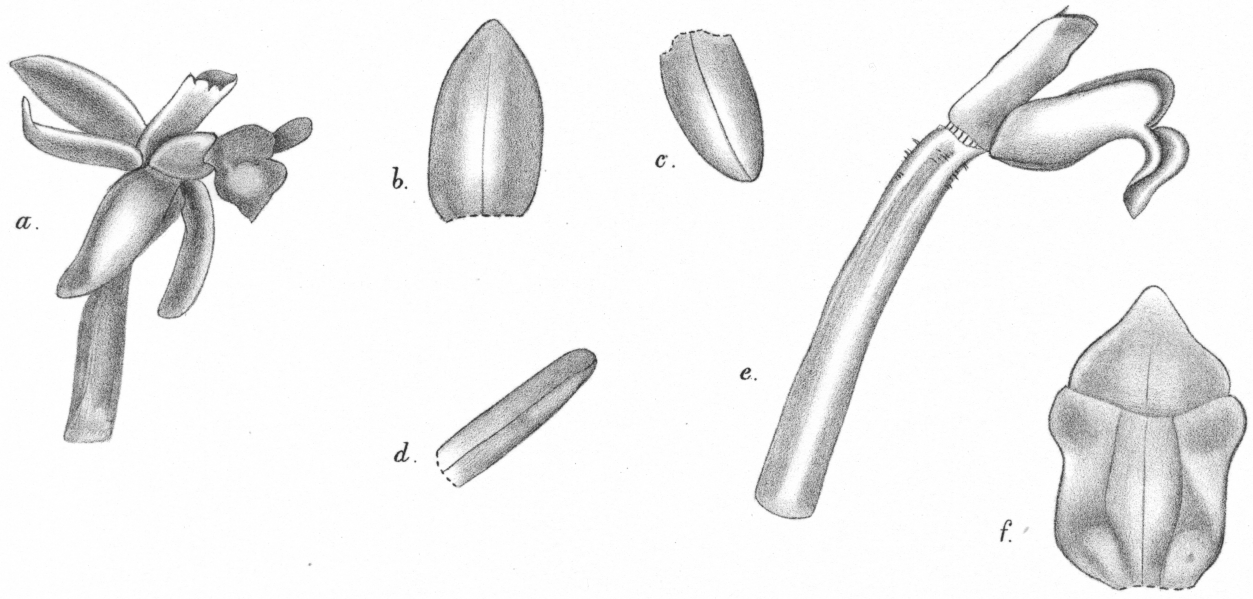
L, 26. **Podochilus mamberamensis** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum explanatum.
e. Gynostemium.
f. Anthera.

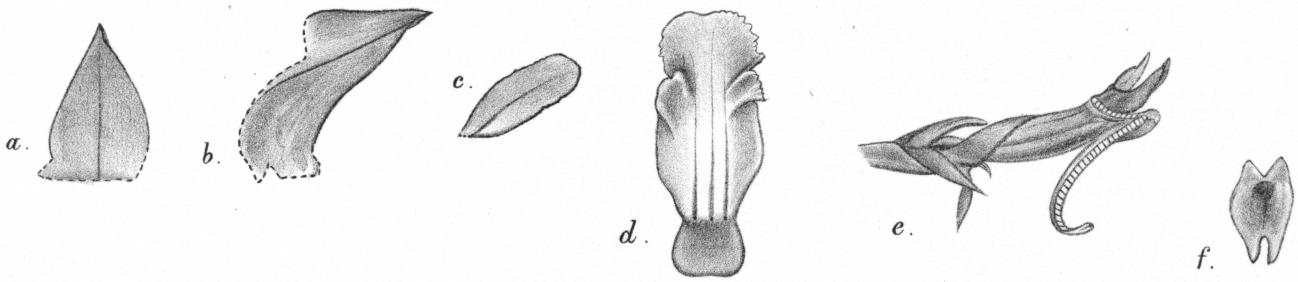
L, 27. **Appendicula patentissima** J. J. S.

a. Bractea.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera supra visa.
h. Idem, a latere visa.

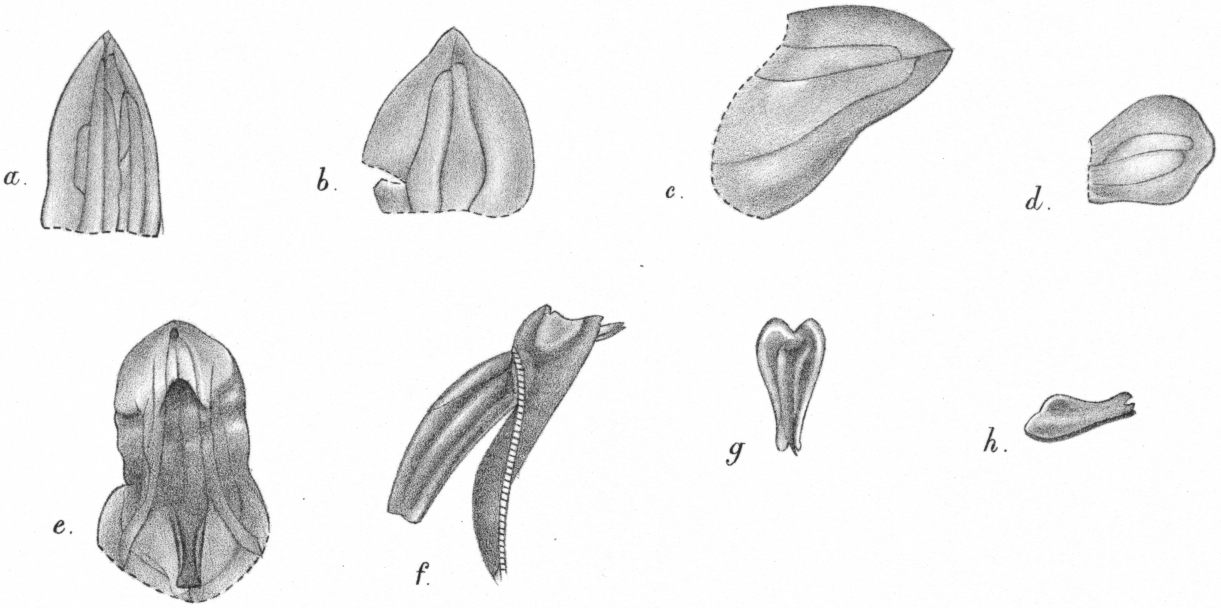
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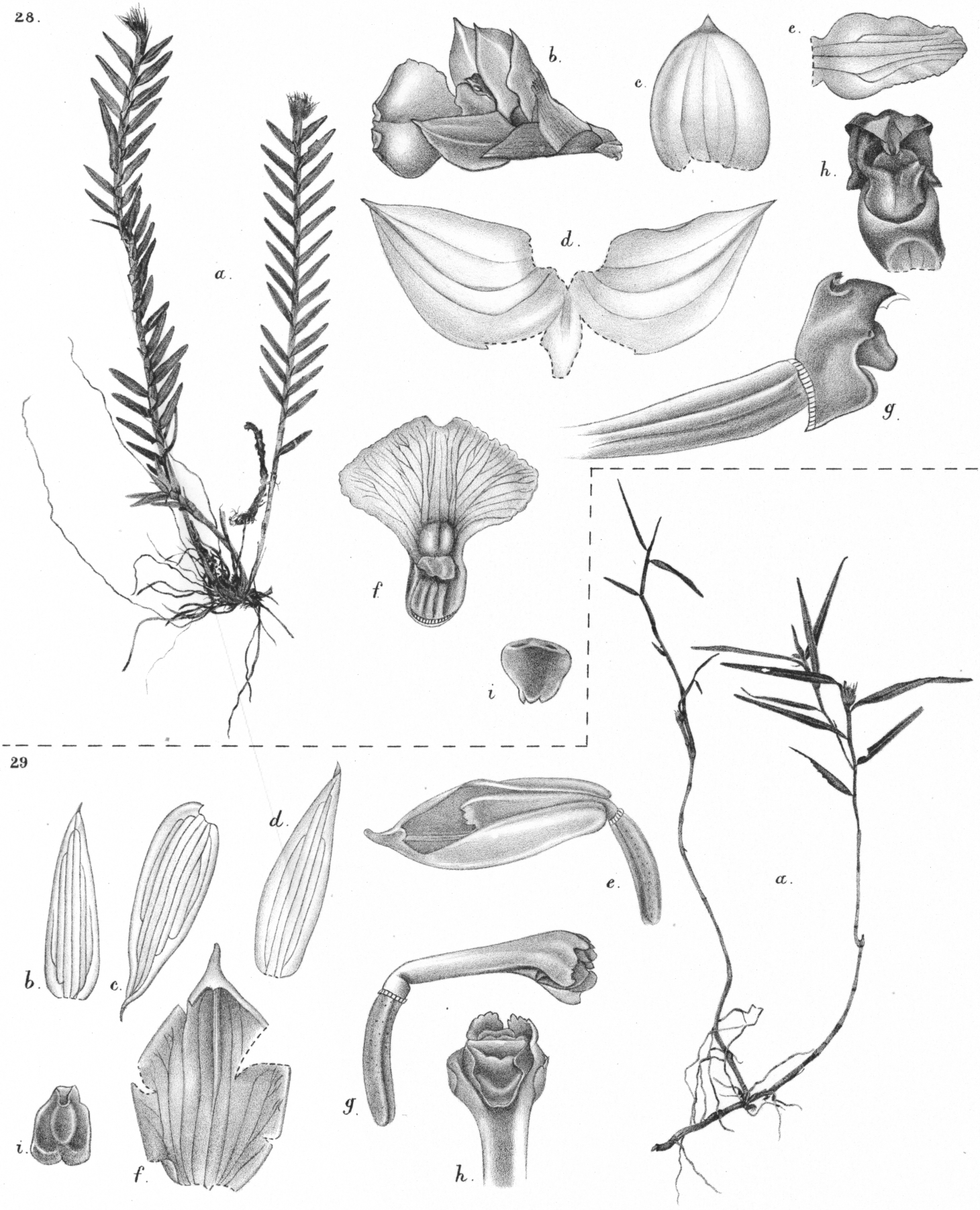


LI, 28. **Agrostophyllum fibrosum** J. J. S.

a. Planta florens.
b. Inflorescentia partialis.
c. Sepalum dorsale.
d. Sepala lateralia.
e. Petalum.
f. Labellum explanatum.
g. Gynostemium a latere visum.
h. Idem, antice visum.
i. Anthera.

LI, 29. **Aglossorhyncha galanthiflora** J. J. S.

a. Planta florens.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Apex gynostemii subtus visus.
i. Anthera.



J. J. Smith del.

Lith. P. J. Mulder & Zn. Leiden.

LII, 30. **Aglossorhyncha peculiaris** J. J. S.

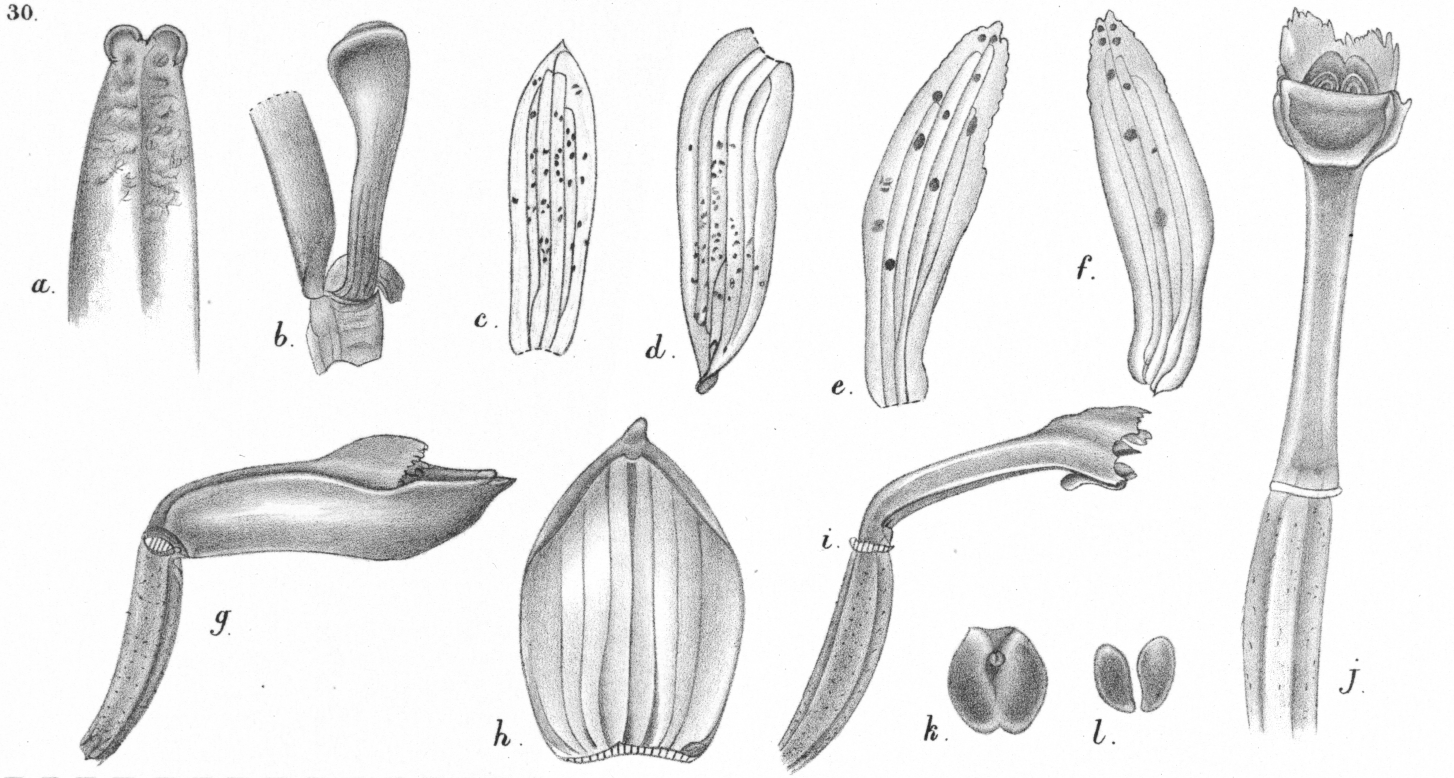
a. Apex folii.
b. Bractea.
c. Sepalum dorsale.
d. Sepalum laterale.
e, *f*. Petala.
g. Labellum cum gynostemio.
h. Labellum explanatum.
i. Gynostemium.
j. Idem, subtus visum.
k. Anthera.
l. Pollinia.

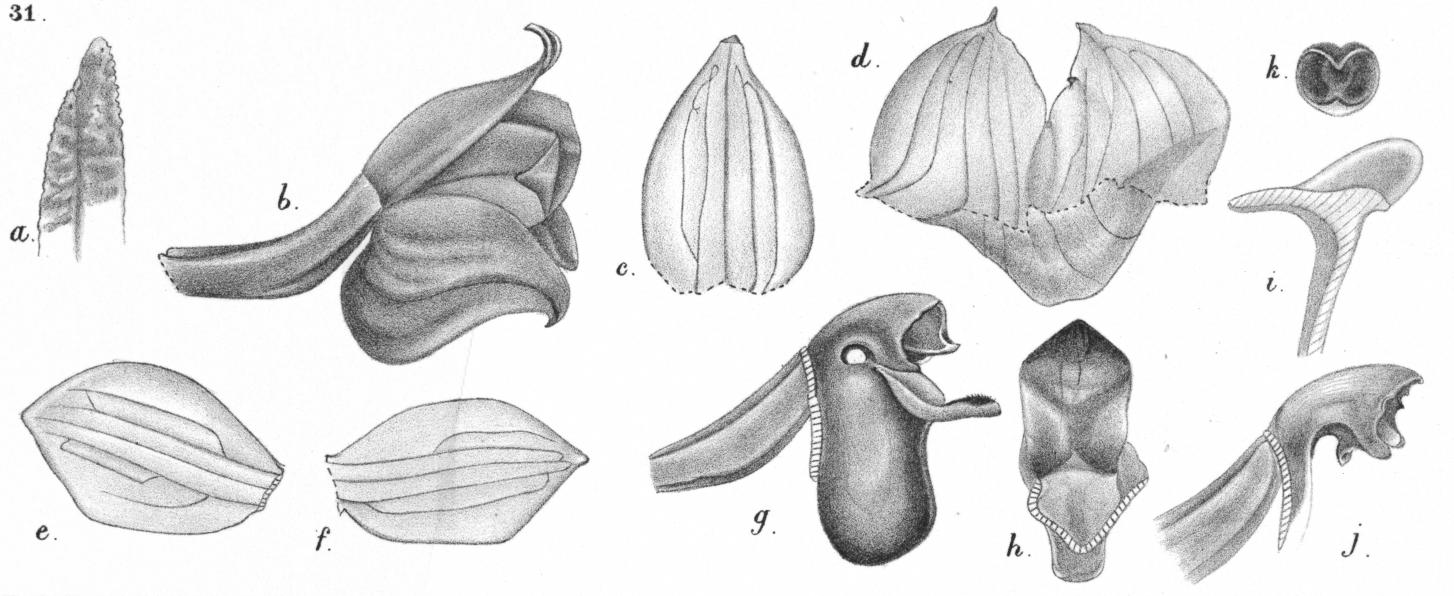
LII, 31. **Glomera hubrechtiana** J. J. S.

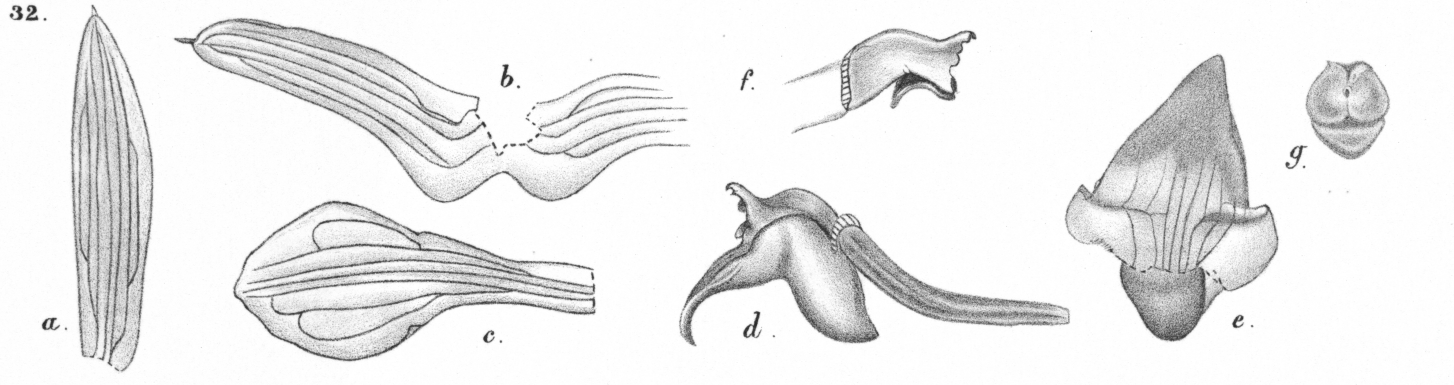
a. Apex folii.
b. Flos.
c. Sepalum dorsale.
d. Sepala lateralia.
e, *f*. Petala.
g. Labellum cum gynostemio.
h. Labellum explanatum.
i. Labelli laminae sectio longitudinalis.
j. Gynostemium.
k. Anthera.

LII, 32. **Glomera minutigibba** J. J. S.

a. Sepalum dorsale.
b. Sepala lateralia.
e. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera.


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LIII, 33. **Glomera pleiotricha** J. J. S.

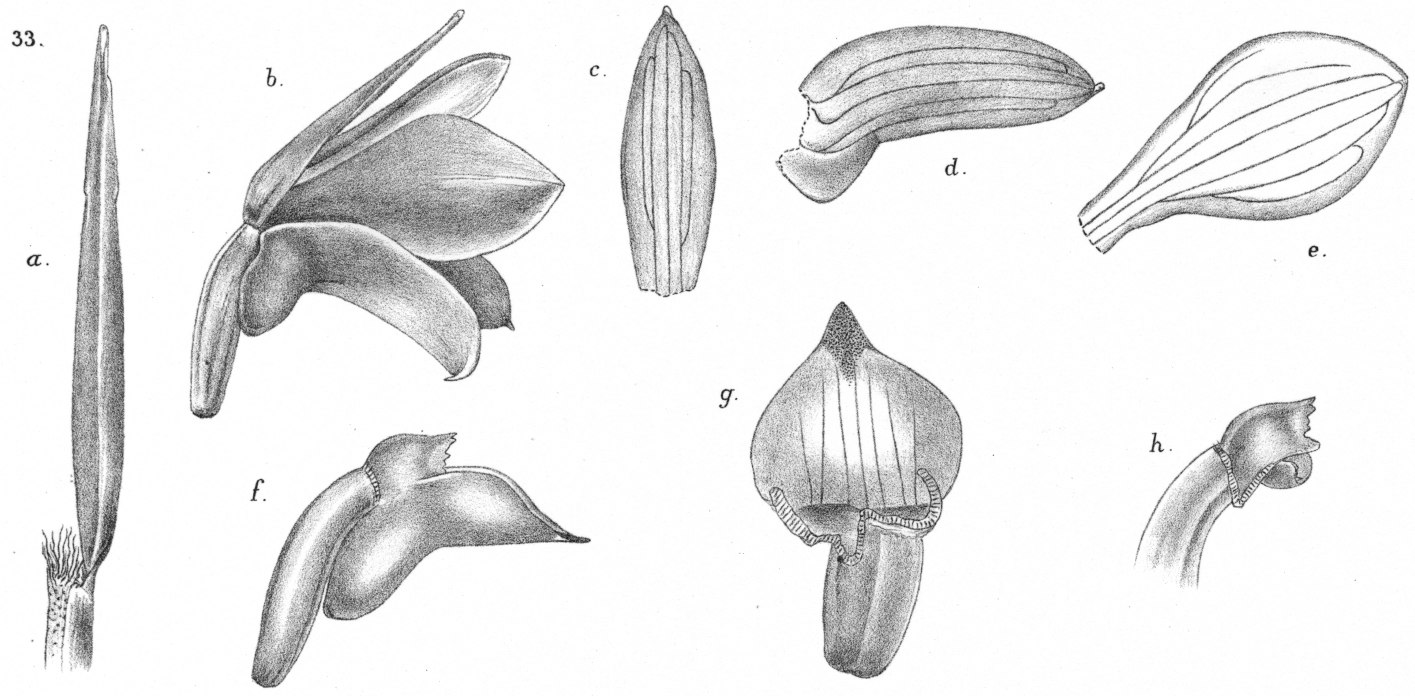
a. Folium.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum cum gynostemio.
g. Labellum explanatum.
h. Gynostemium.

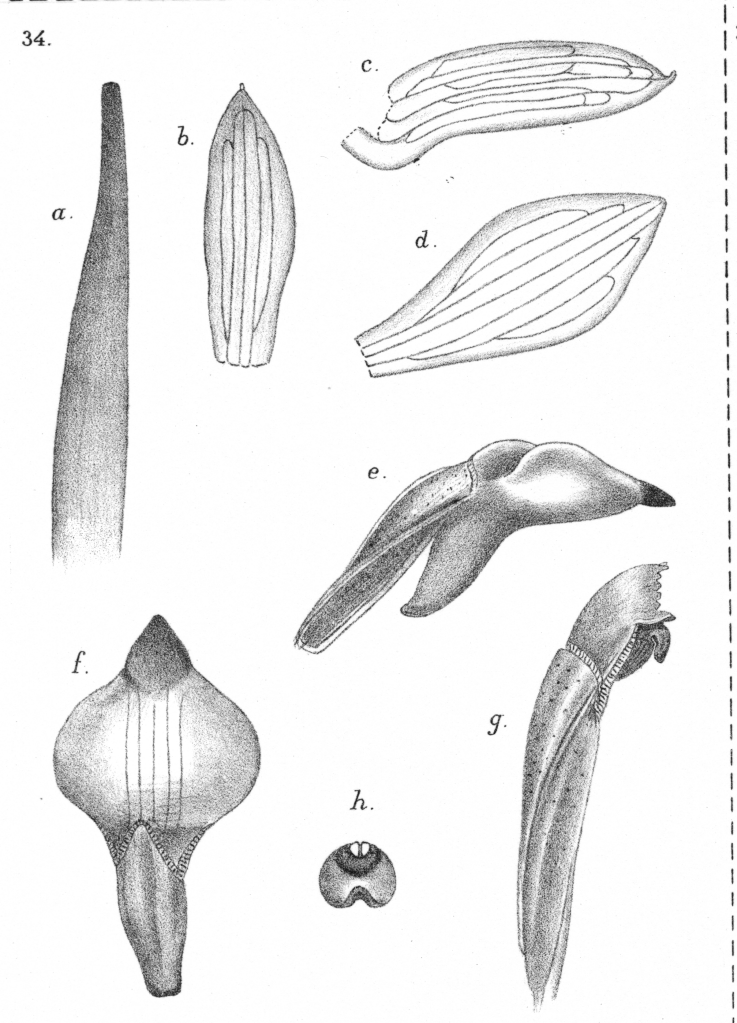
LIII, 34. **Glomera acutipetala** J. J. S.

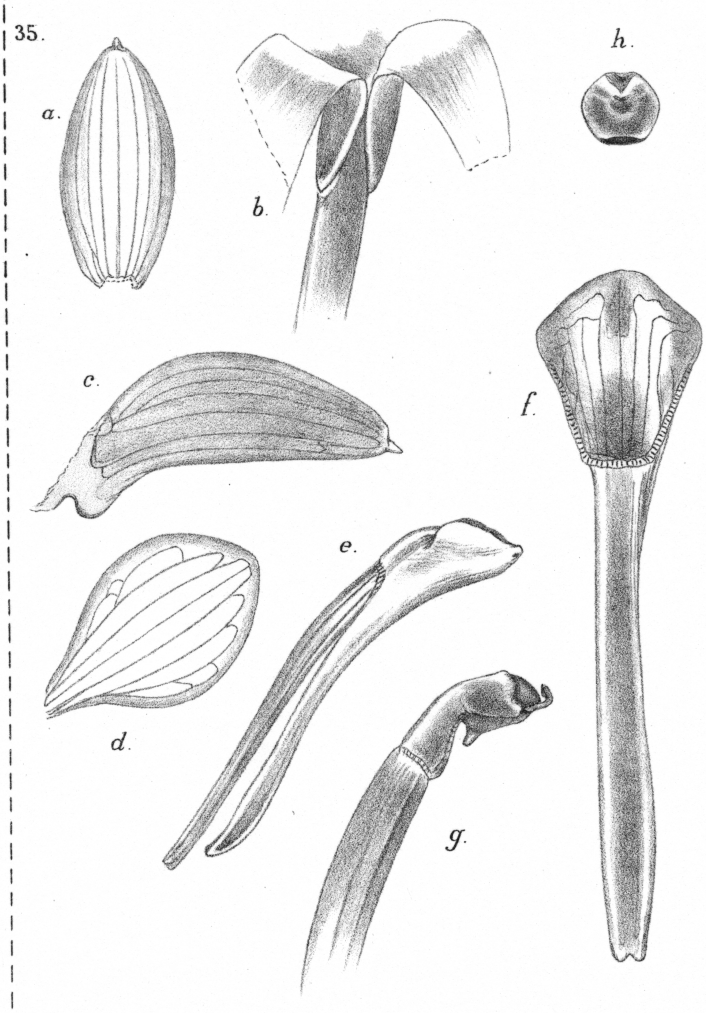
a. Apex folii.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.

LIII, 35. **Glomera adenandroides** Schltr.

a. Sepalum dorsale.
b. Basis sepalorum lateralium.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.







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LIV, 36. **Glomera subeciliata** J. J. S.

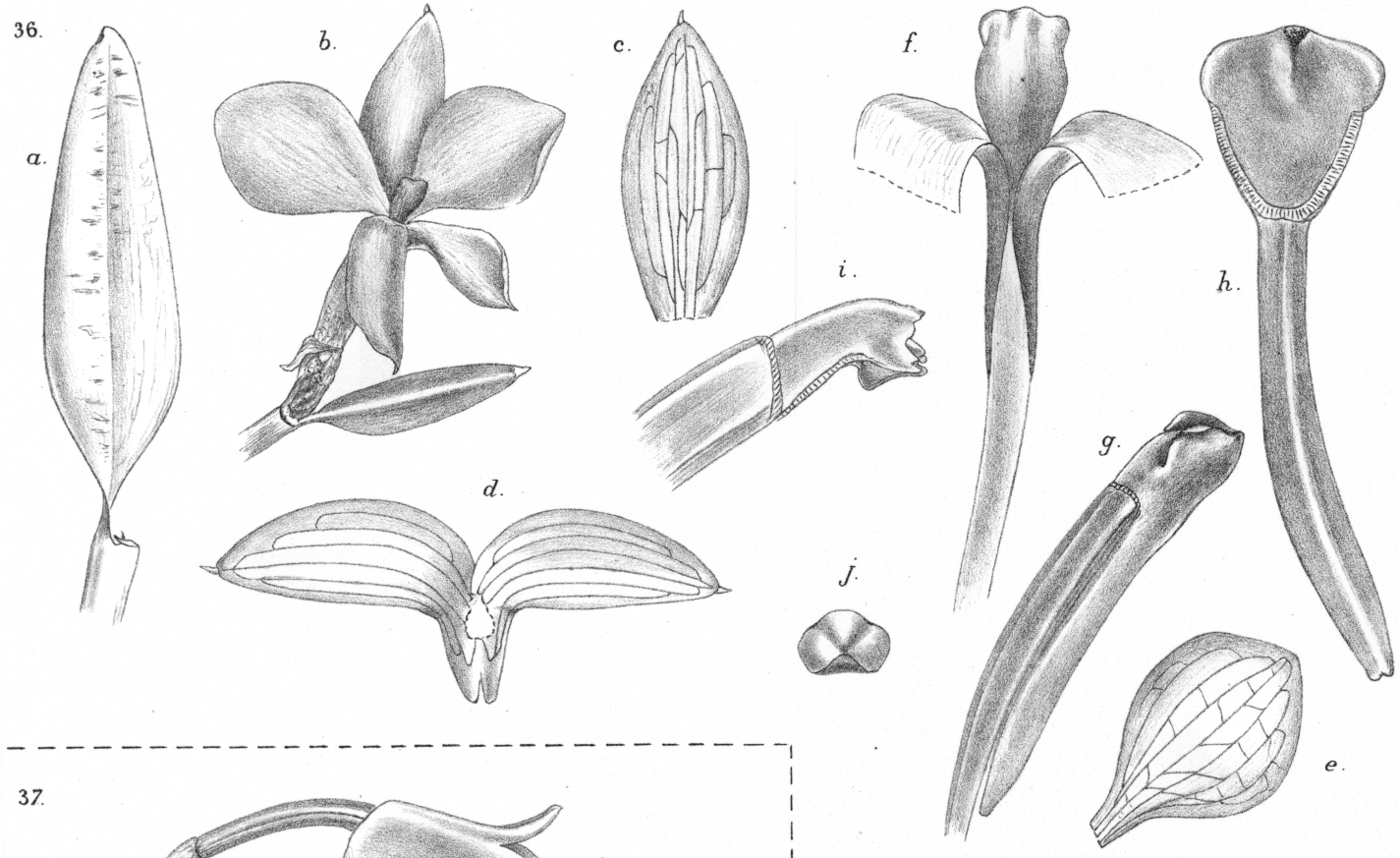
a. Folium.
b. Flos.
c. Sepalum dorsale.
d. Sepala lateralia.
e. Petalum.
f. Labellum subtus visum.
g. Labellum cum gynostemio.
h. Labellum explanatum.
i. Gynostemium.
j. Anthera.

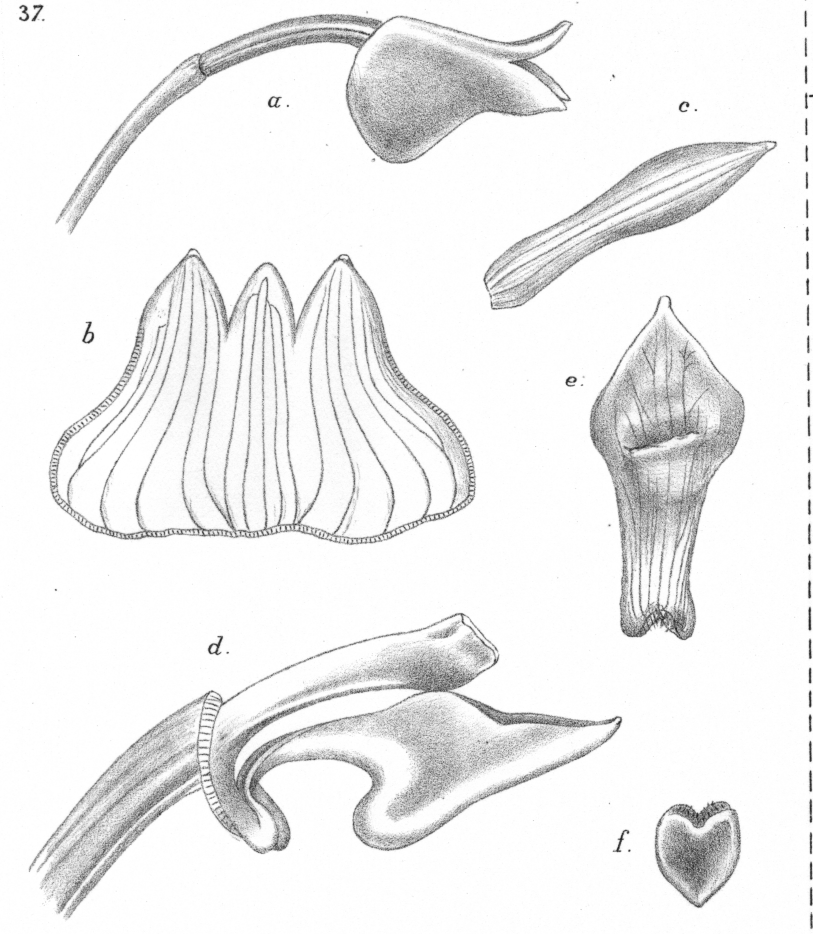
LIV, 37. **Mediocalcar crenulatum** J. J. S.

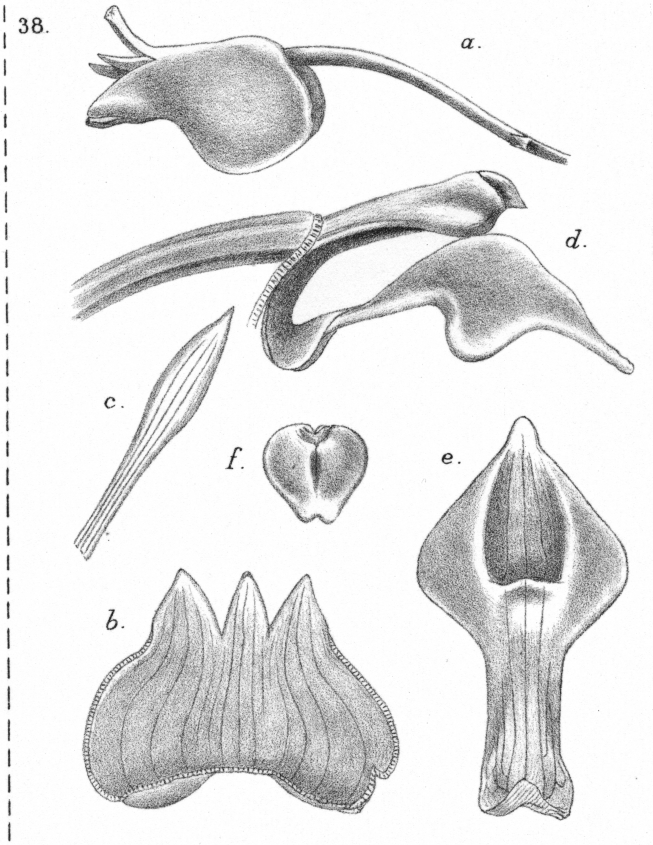
a. Flos.
b. Sepala.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Anthera.

LIV, 38. **Mediocalcar retusum** J. J. S.

a. Flos.
b. Sepala.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Anthera.







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LV, 39. **Mediocalcar compressicalcar** J. J. S.

a. Sepala.
b. Petalum.
c. Labellum cum gynostemio.
d. Labellum explanatum.
e. Anthera.
f. Bractea.

LV, 40. **Ceratostylis mamberamensis** J. J. S.

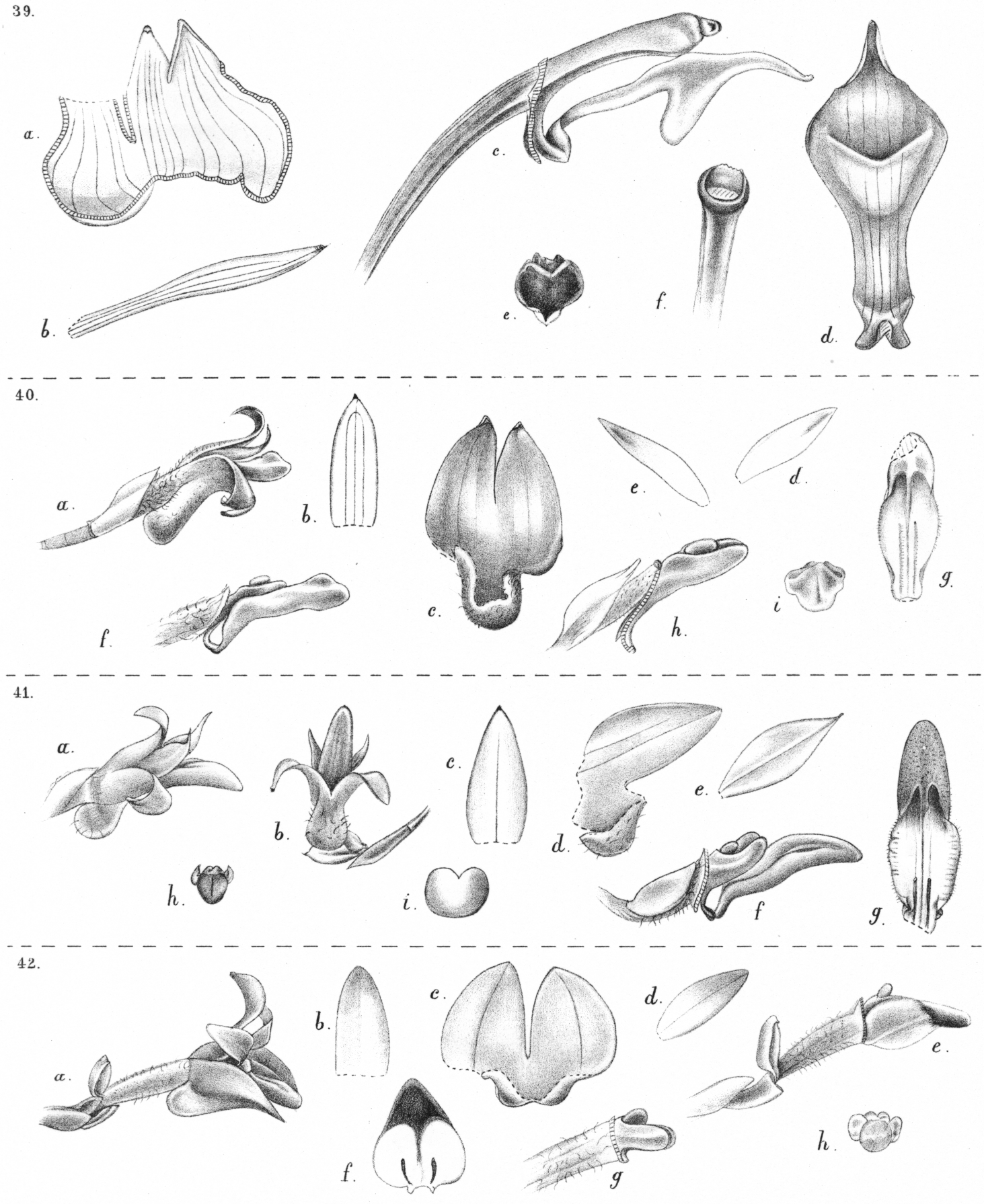
a. Flos.
b. Sepalum dorsale.
c. Sepala lateralia.
d. *e*, Petala.
f. Labellum cum gynostemio.
g. Labellum explanatum.
h. Gynostemium.
i. Anthera.

LV, 41. **Ceratostylis sacculata** J. J. S.

a. Flos.
b. Flos antice visus.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum cum gynostemio.
g. Labellum explanatum.
h. Anthera.
i. Folii sectio transversalis.

LV, 42. **Ceratostylis ovatilabris** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepala lateralia.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.



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LVI, 43. **Ceratostylis muscicola** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.

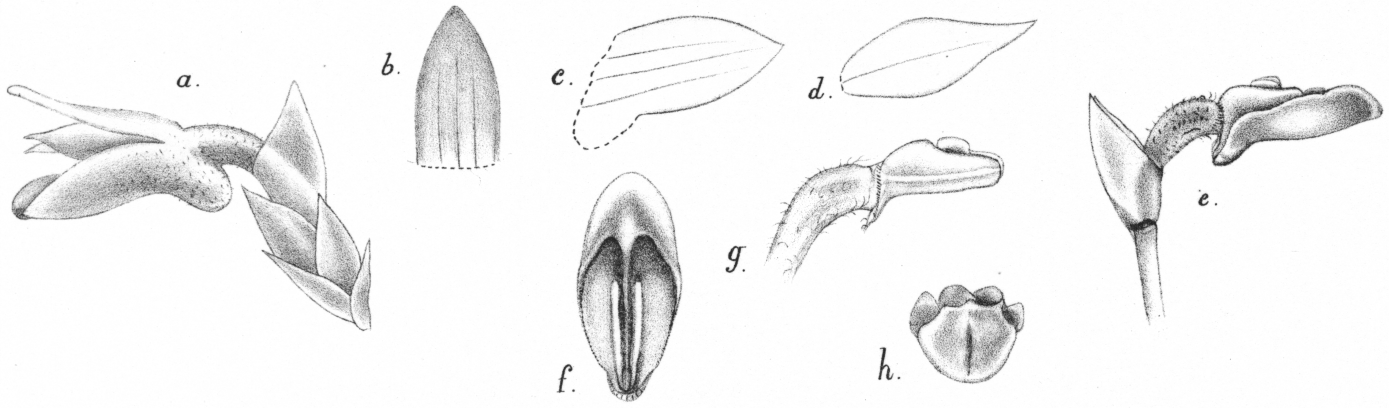
LVI, 44. **Eria leucotricha** Schltr.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Anthera.

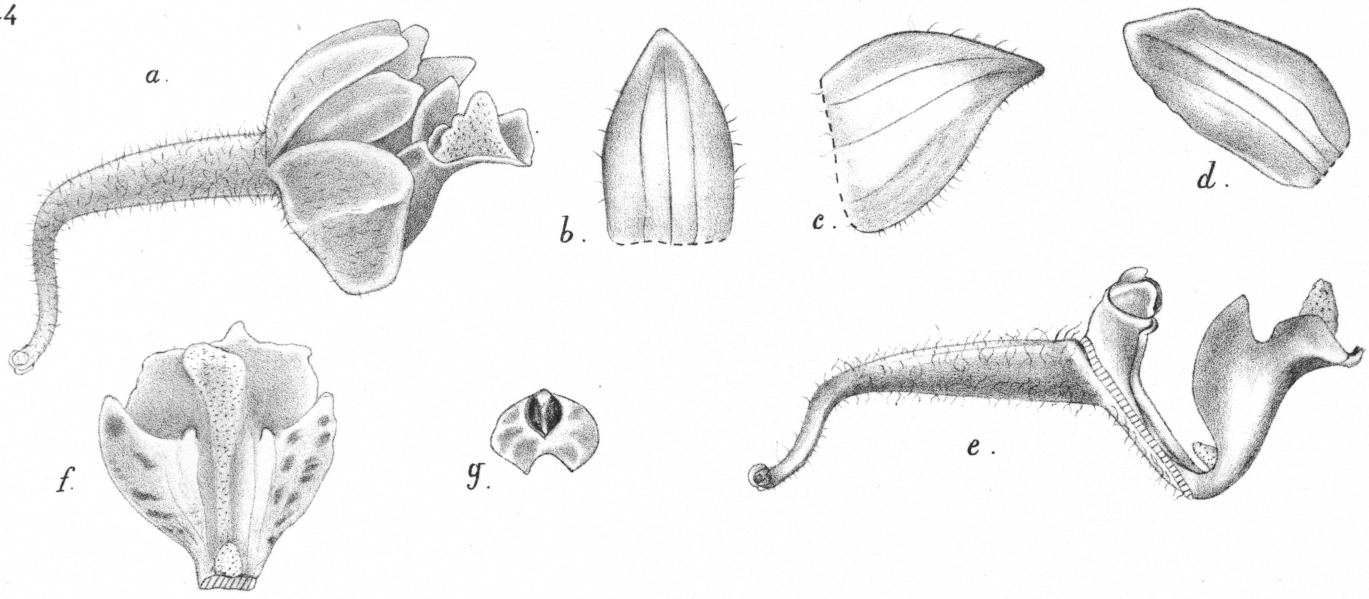
LVI, 45. **Eria ediensis** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Anthera.
g. Bractea.

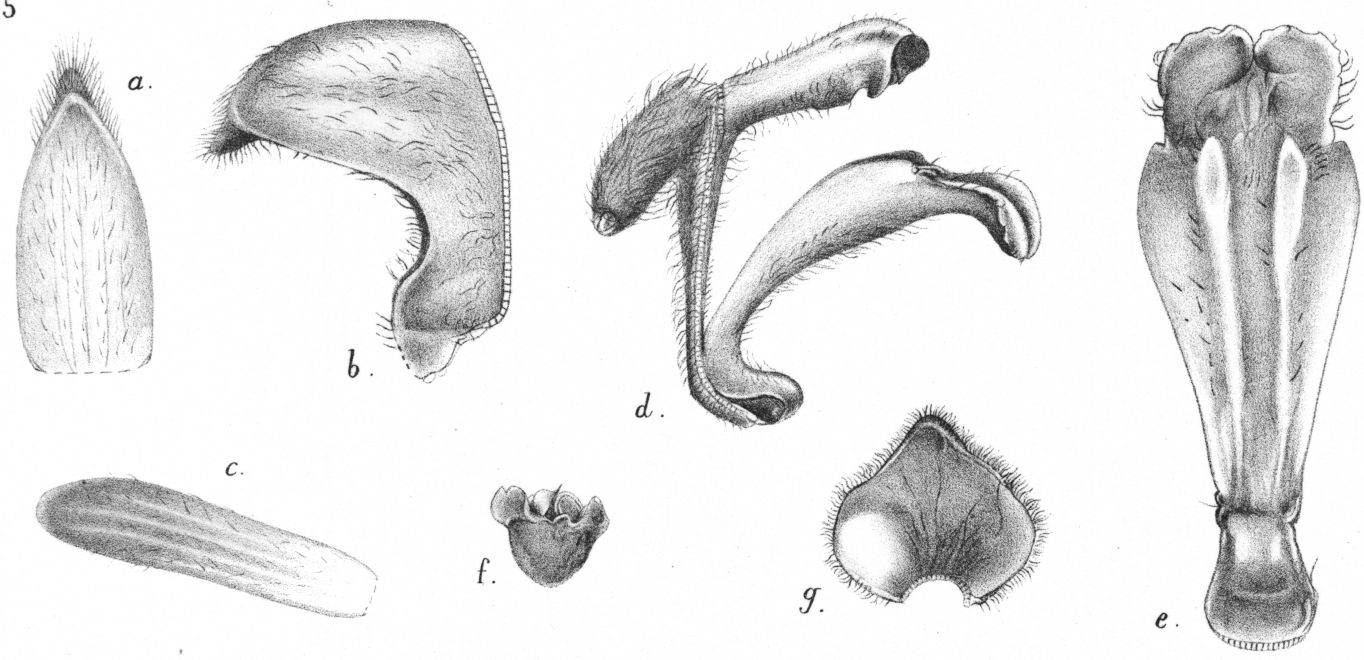
43



44



45



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LVII, 46. **Eria latifrons** J. J. S.

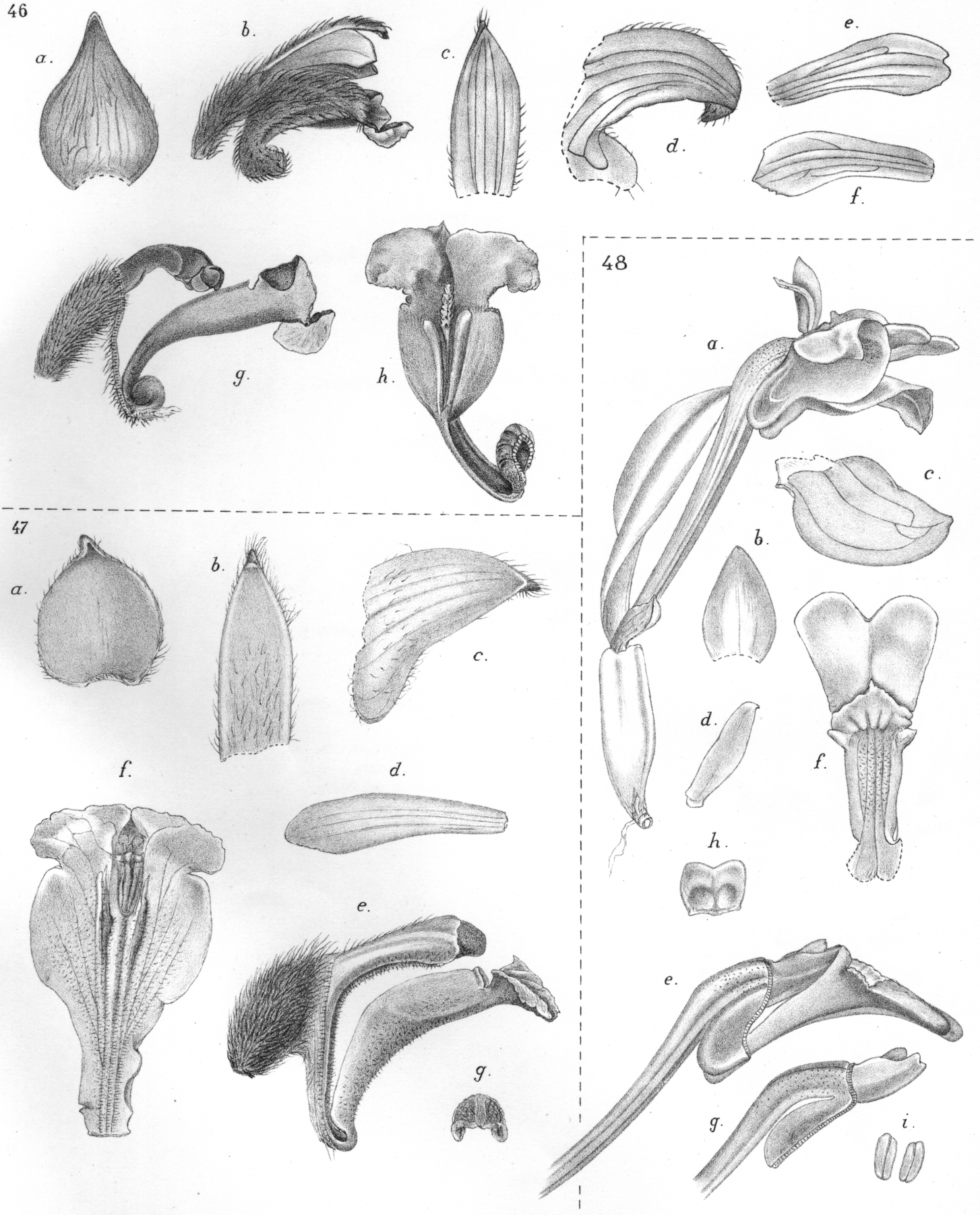
a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e, *f.* Petala.
g. Labellum cum gynostemio.
h. Labellum explanatum.

LVII, 47. **Eria Thomsenii** J. J. S.

a. Bractea.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Anthera.

LVII, 48. **Dendrobium furcillatum** J. J. S.

a. Pseudobulbus florens.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Pollinia.



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LVIII, 49. **Dendrobium aprinoides** J. J. S.

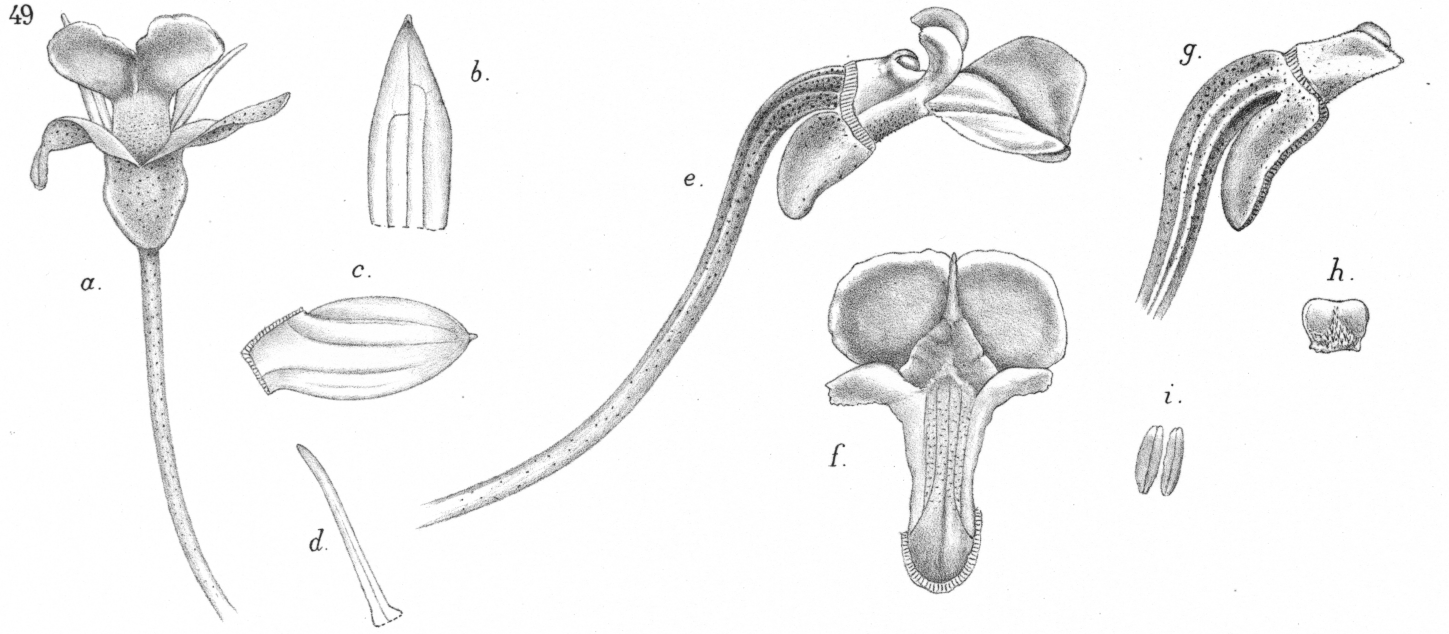
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Pollinia.

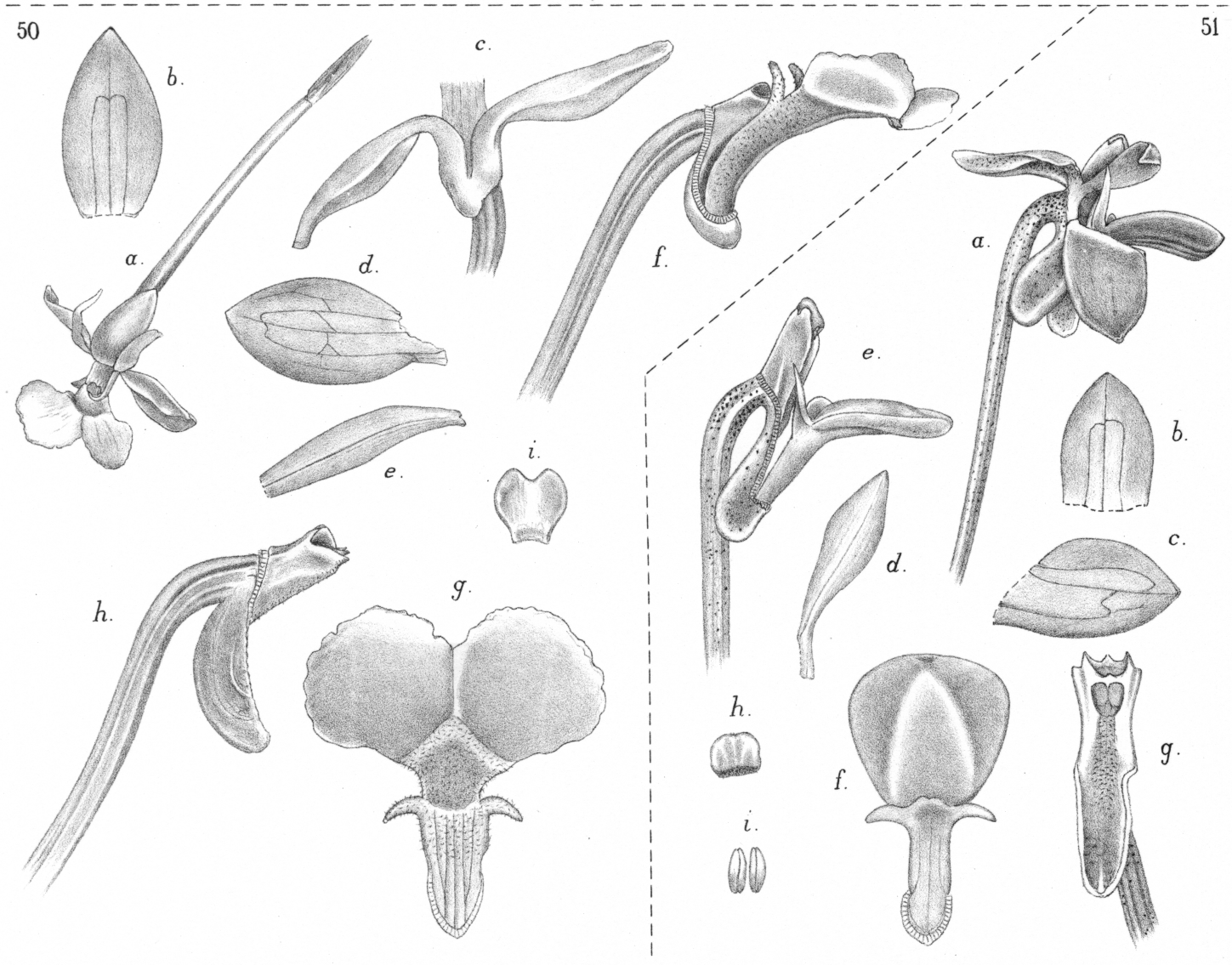
LVIII, 50. **Dendrobium pseudoaprinum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Mentum.
d. Sepalum laterale.
e. Petalum.
f. Labellum cum gynostemio.
g. Labellum explanatum.
h. Gynostemium.
i. Anthera.

LVIII, 51. **Dendrobium remotisepalum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum cum gynostemio.
f. Labellum explanatum.
g. Gynostemium subtus visum.
h. Anthera.
i. Pollinia.





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LIX, 52. **Dendrobium Doormanii** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Gynostemium a dorso visum.
g. Anthera.

LIX, 53. **Dendrobium stelliferum** J. J. S.

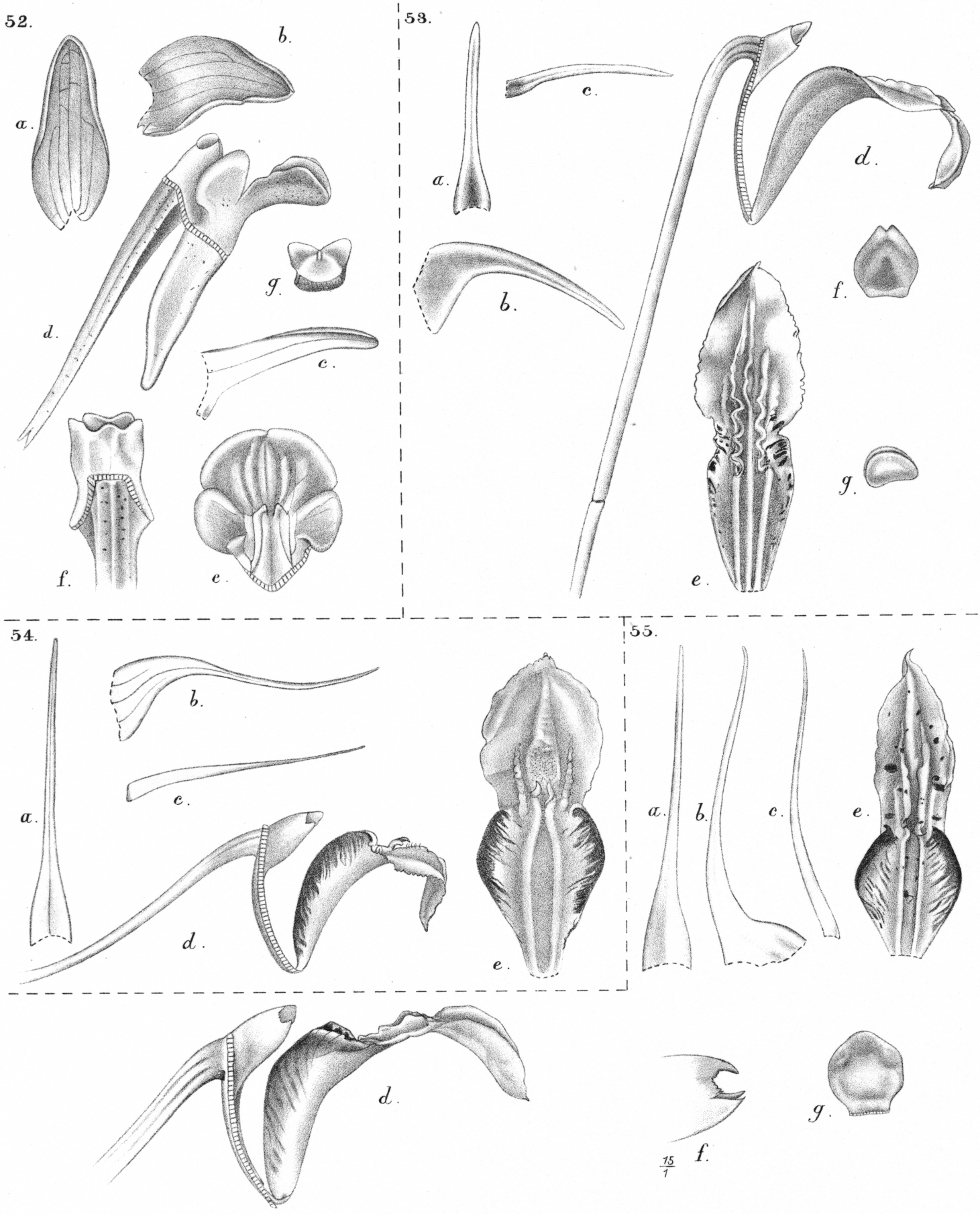
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Anthera.
g. Pollinia.

LIX, 54. **Dendrobium mamberamense** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.

LIX, 55. **Dendrobium tortitepalum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum cum gynostemio.
e. Labellum explanatum.
f. Apex gynostemio.
g. Anthera.



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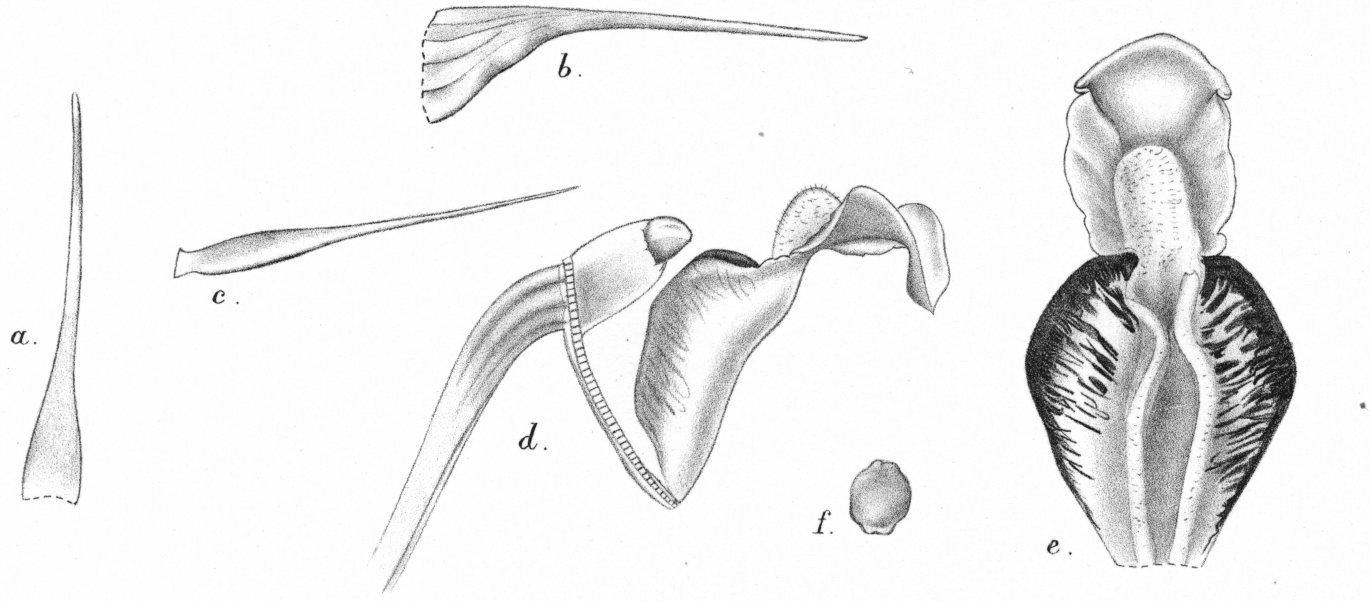
LX, 56. **Dendrobium recurvifolium** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Anthera.

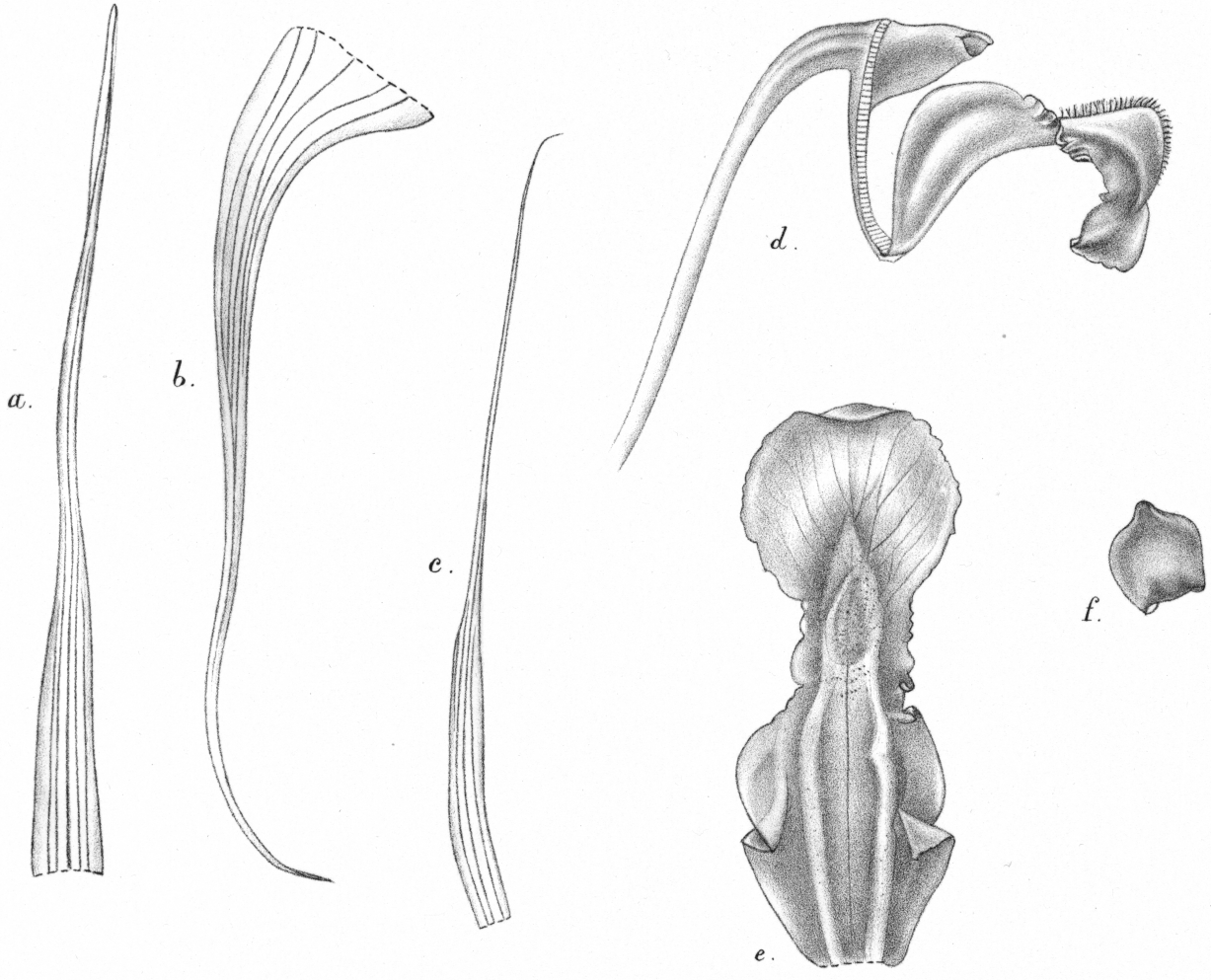
LX, 57. **Dendrobium gibbiferum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Anthera.

56.



57.



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LXI, 58. **Dendrobium schouteniense** J. J. S.

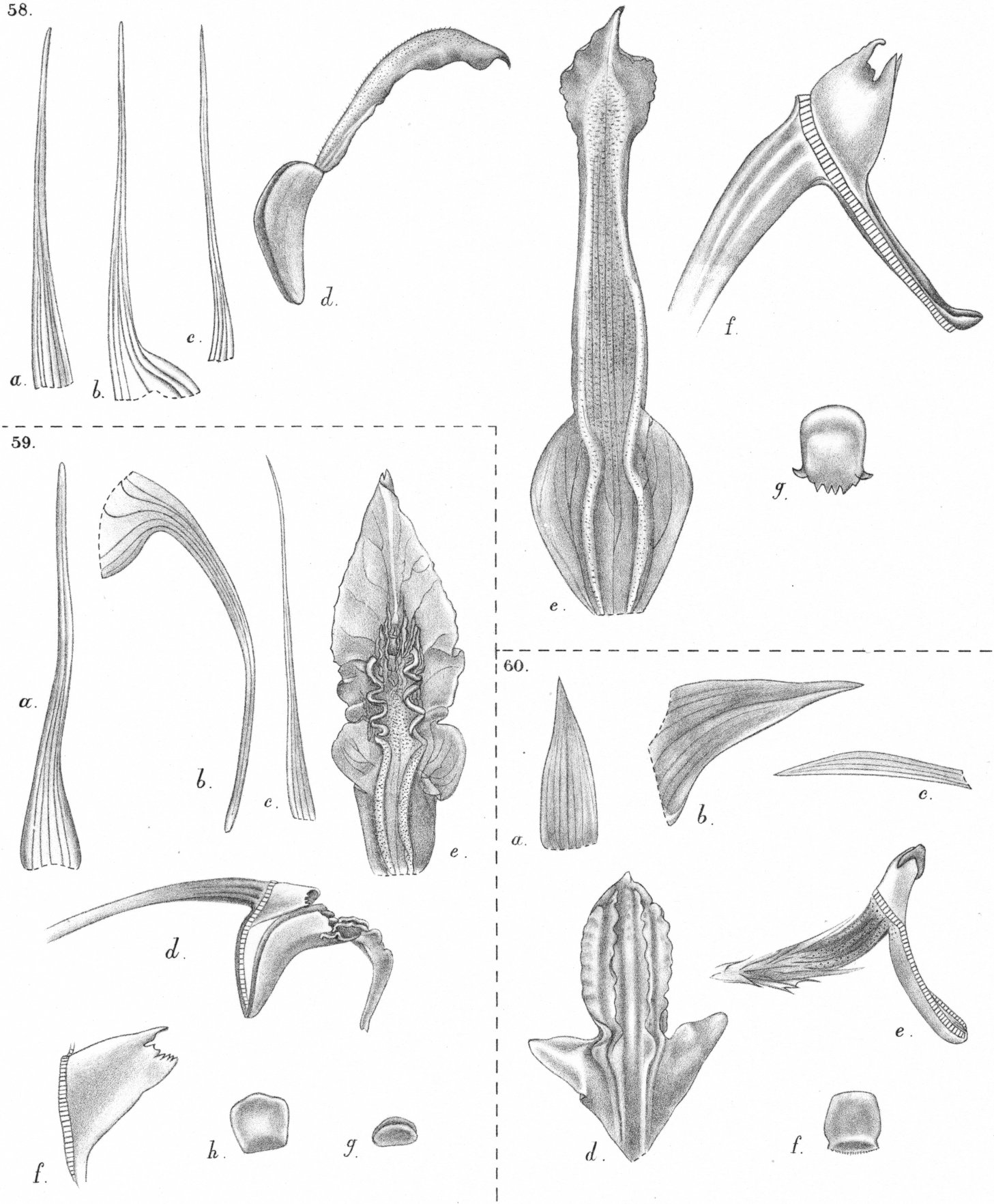
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum.
e. Idem, explanatum.
f. Gynostemium.
g. Anthera.

LXI, 59. **Dendrobium carinulatidiscum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera.
h. Pollinia.

LXI, 60. **Dendrobium simplicicaule** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum explanatum.
e. Gynostemium.
f. Anthera.



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LXII, 61. **Dendrobium inconspicuum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Anthera.
g. Pollinia.

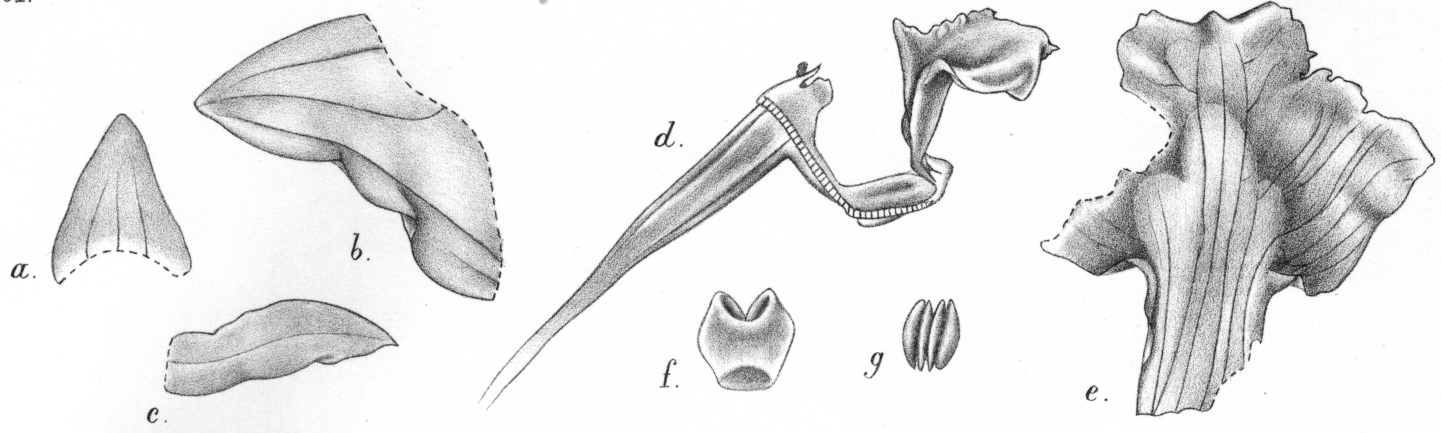
LXII, 62. **Dendrobium quinquecaudatum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.

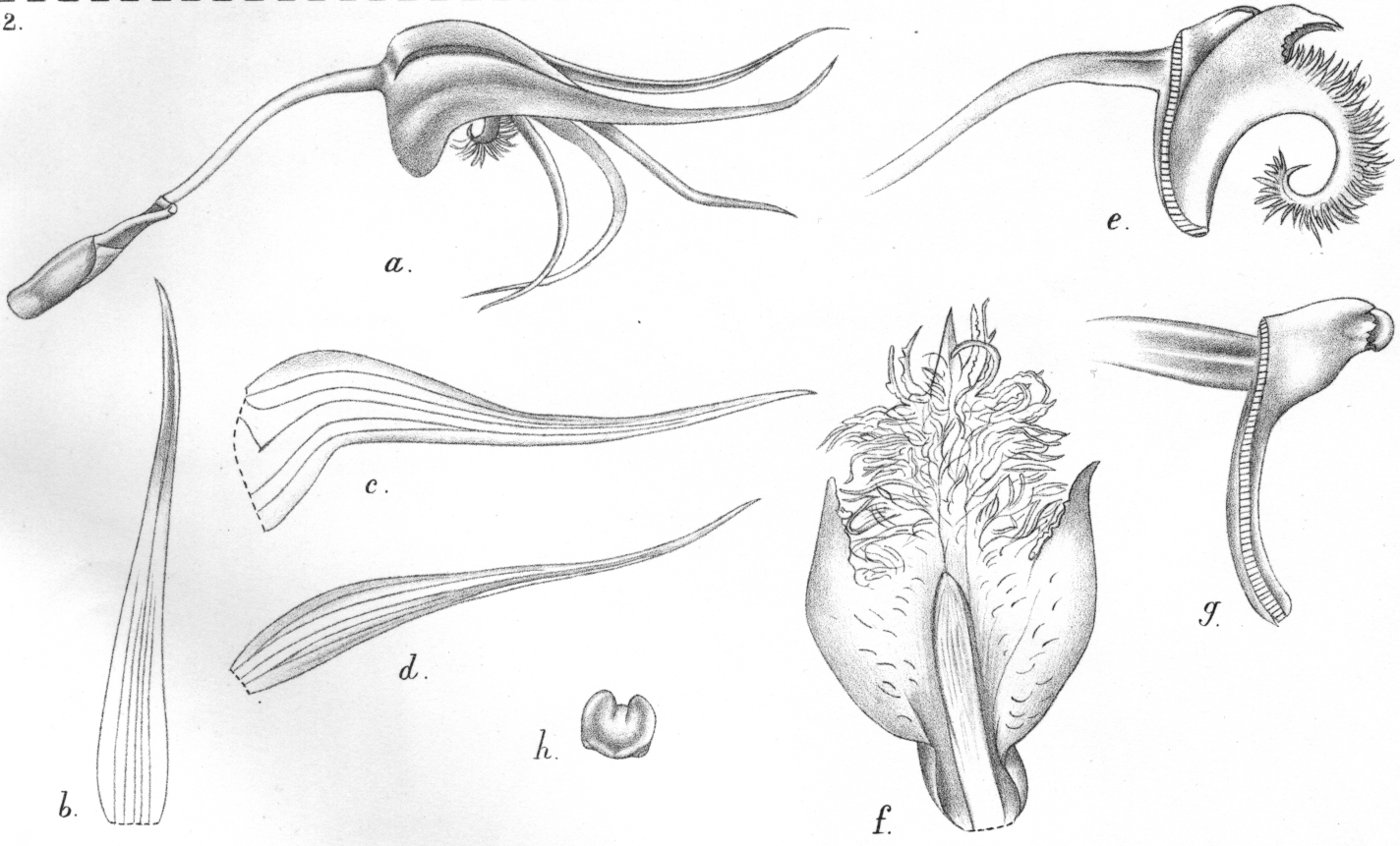
LXII, 63. **Dendrobium polyschistum** Schltr. var. **marginatum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum explanatum.
e. Gynostemium.

61.



62.



63.



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LXIII, 64. **Dendrobium nimium** J. J. S.

a. Ramulus florens.
b, *c*. Apices folii.
d. Sepalum dorsale.
e. Sepalum laterale.
f. Petalum.
g. Labellum et gynostemium.
h. Labellum explanatum.

LXIII, 65. **Dendrobium subtricostatum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum.
e. Idem, explanatum.
f. Gynostemium.
g. Anthera.

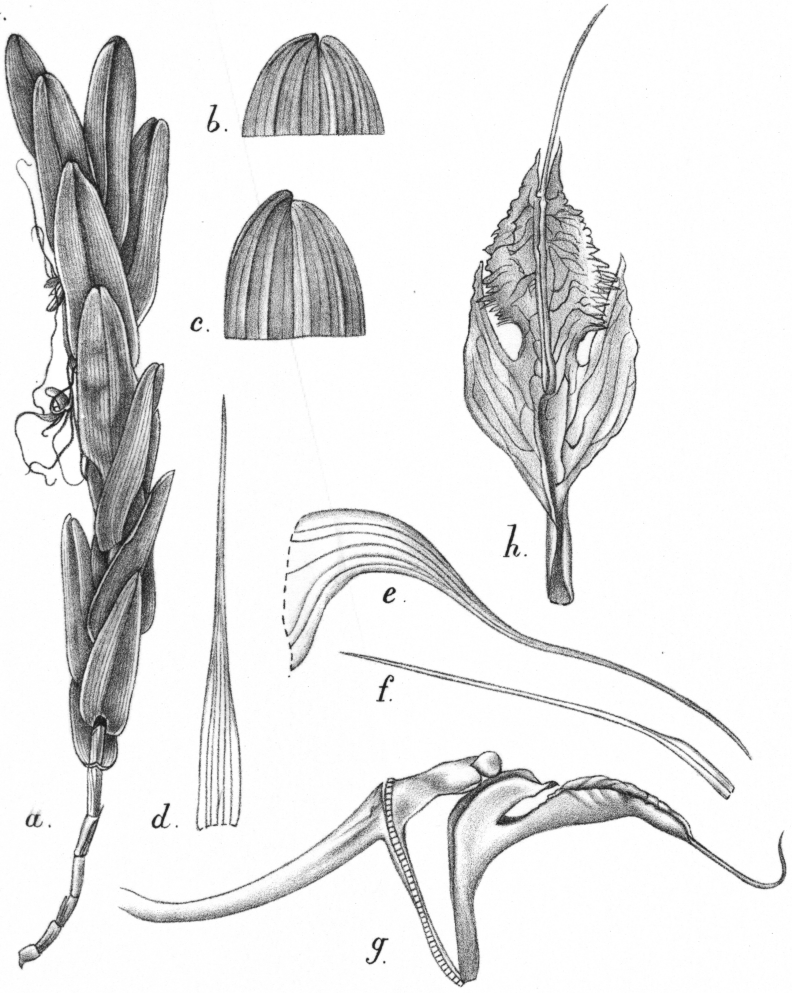
LXIII, 66. **Dendrobium vandoides** Schltr.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Anthera.

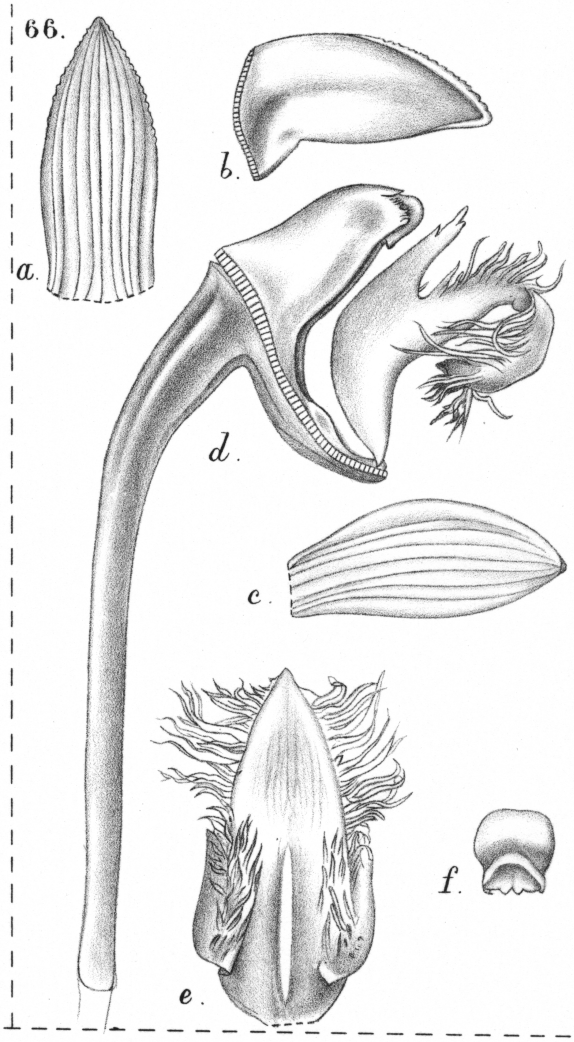
LXIII, 67. **Dendrobium subelobatum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.

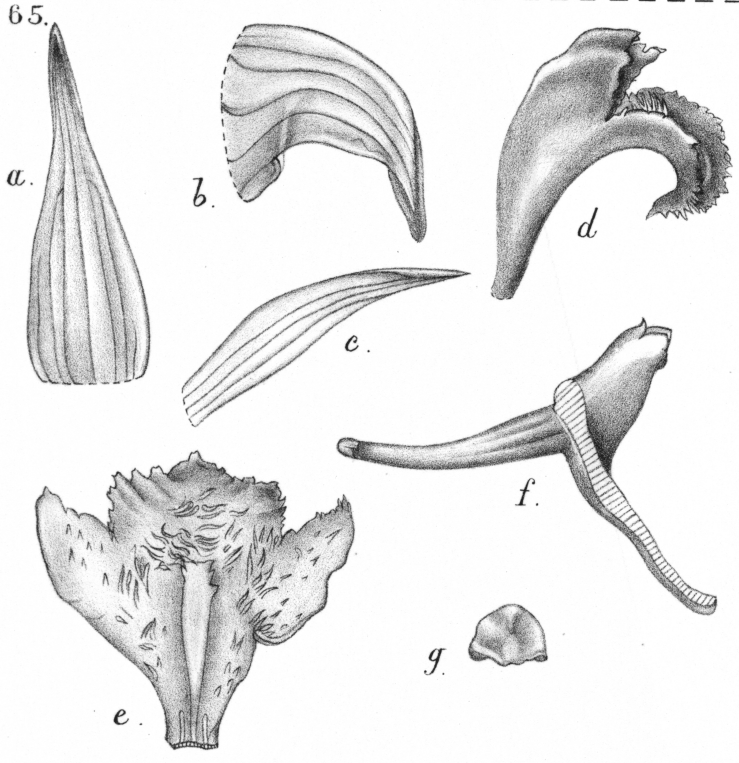
64.



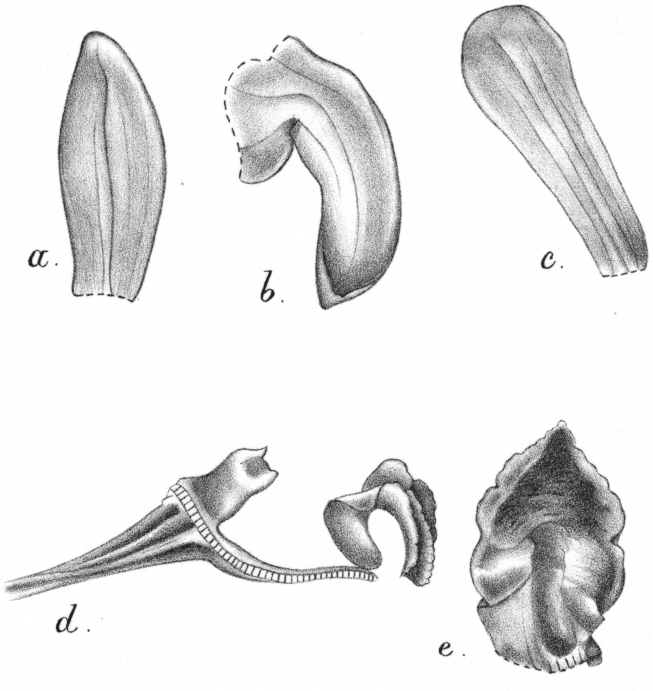
66.



65.



67.



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LXIV, 68. **Dendrobium niveopurpureum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Anthera.

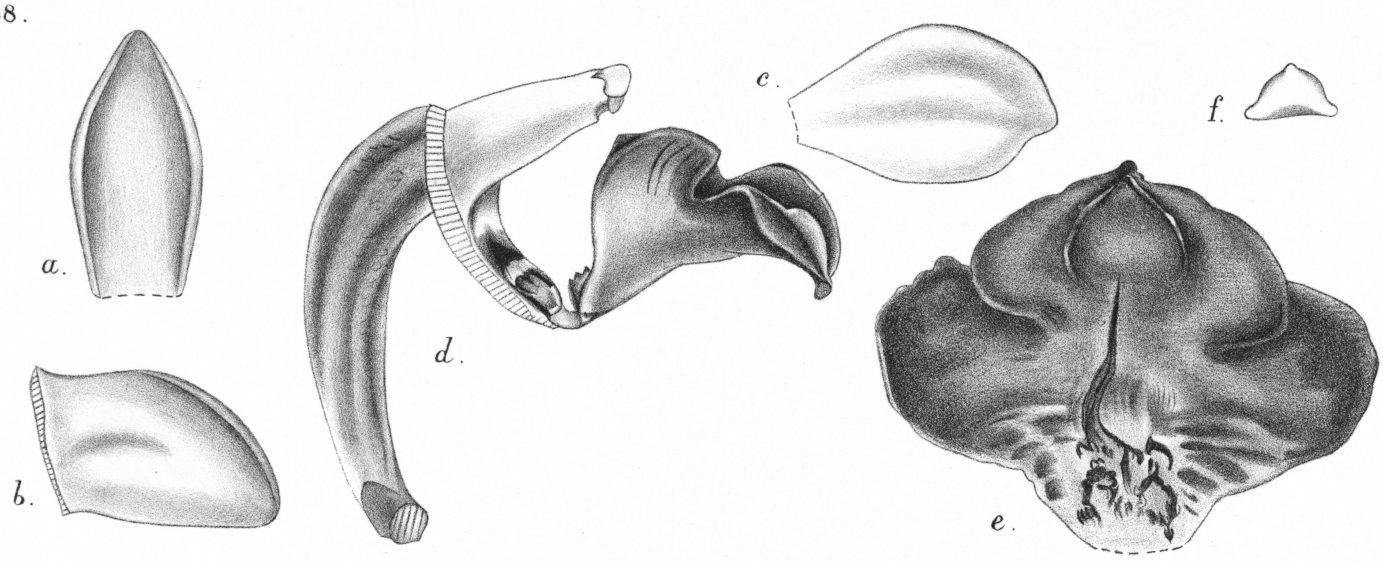
XLIV, 69. **Dendrobium incumbens** Schltr.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum supra visum.
f. Idem, explanatum.
g. Anthera.

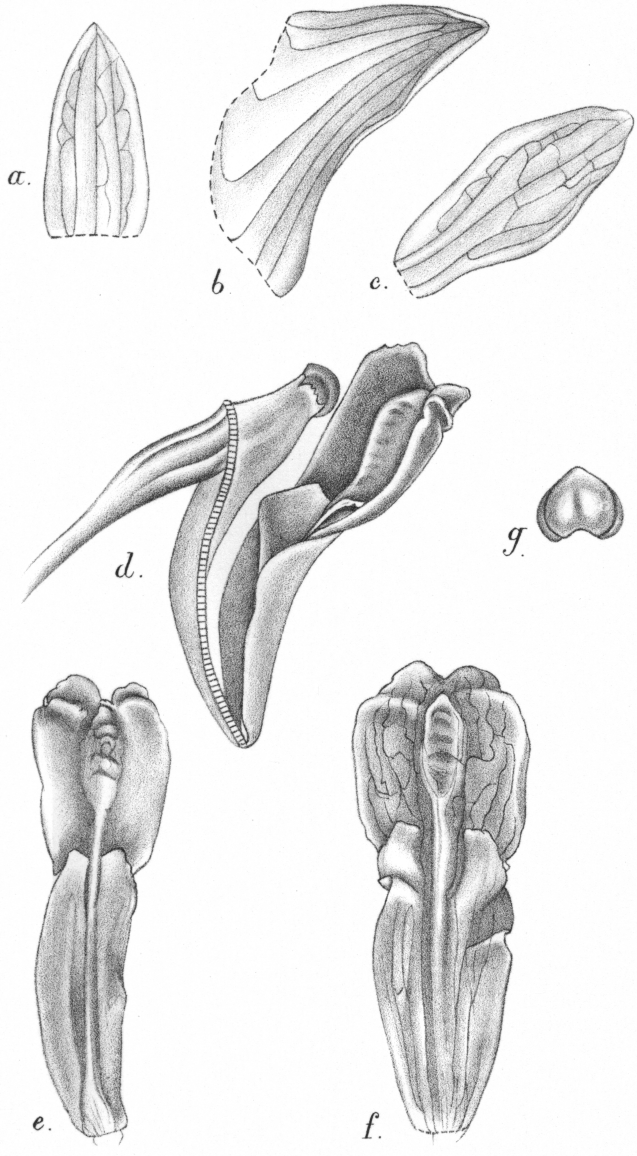
LXIV, 70. **Dendrobium rariflorum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Pollinia.

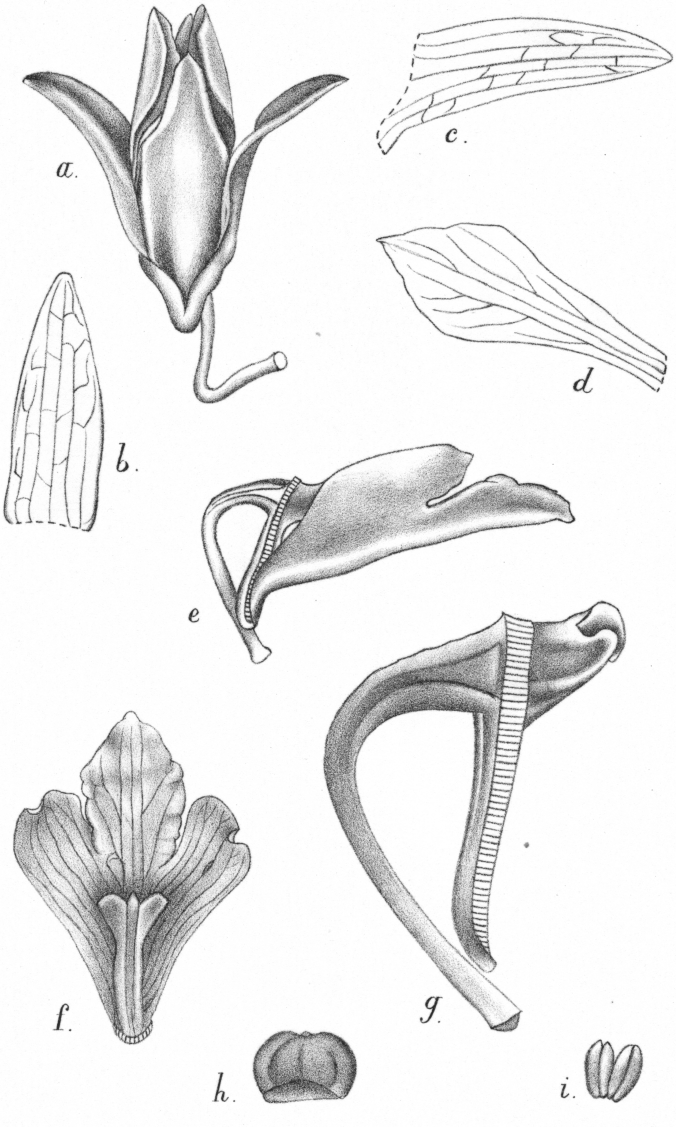
68.



69.



70.

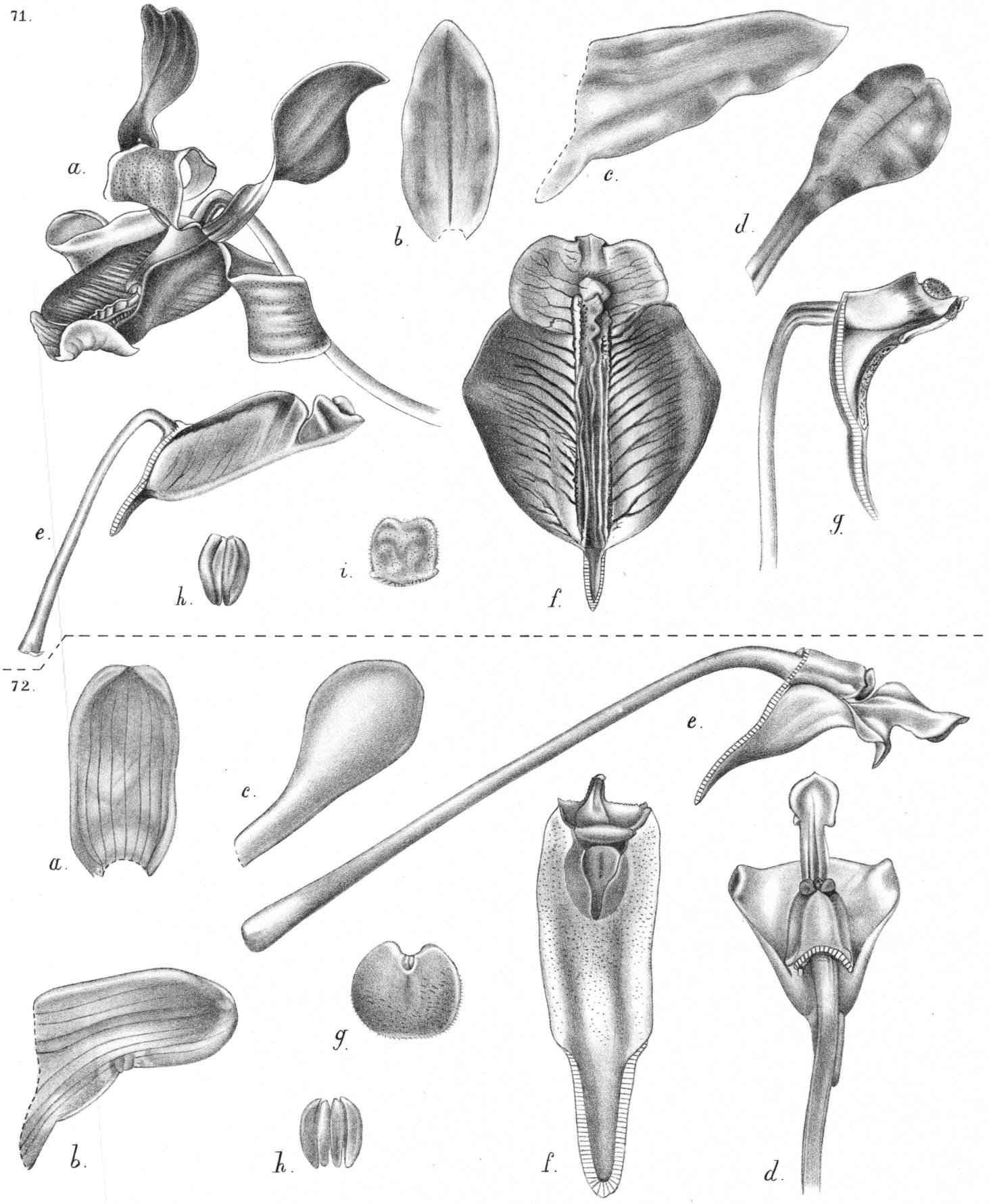


LXV, 71. **Dendrobium Odoardi** Krzl.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Pollinia.
i. Anthera.

LXV, 72. **Dendrobium violaceoflavens** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium supra visum.
e. Idem, a laterale visum.
f. Gynostemium subtus visum.
g. Anthera.
h. Pollinia.



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LXVI, 73. **Dendrobium atromarginatum** J. J. S.

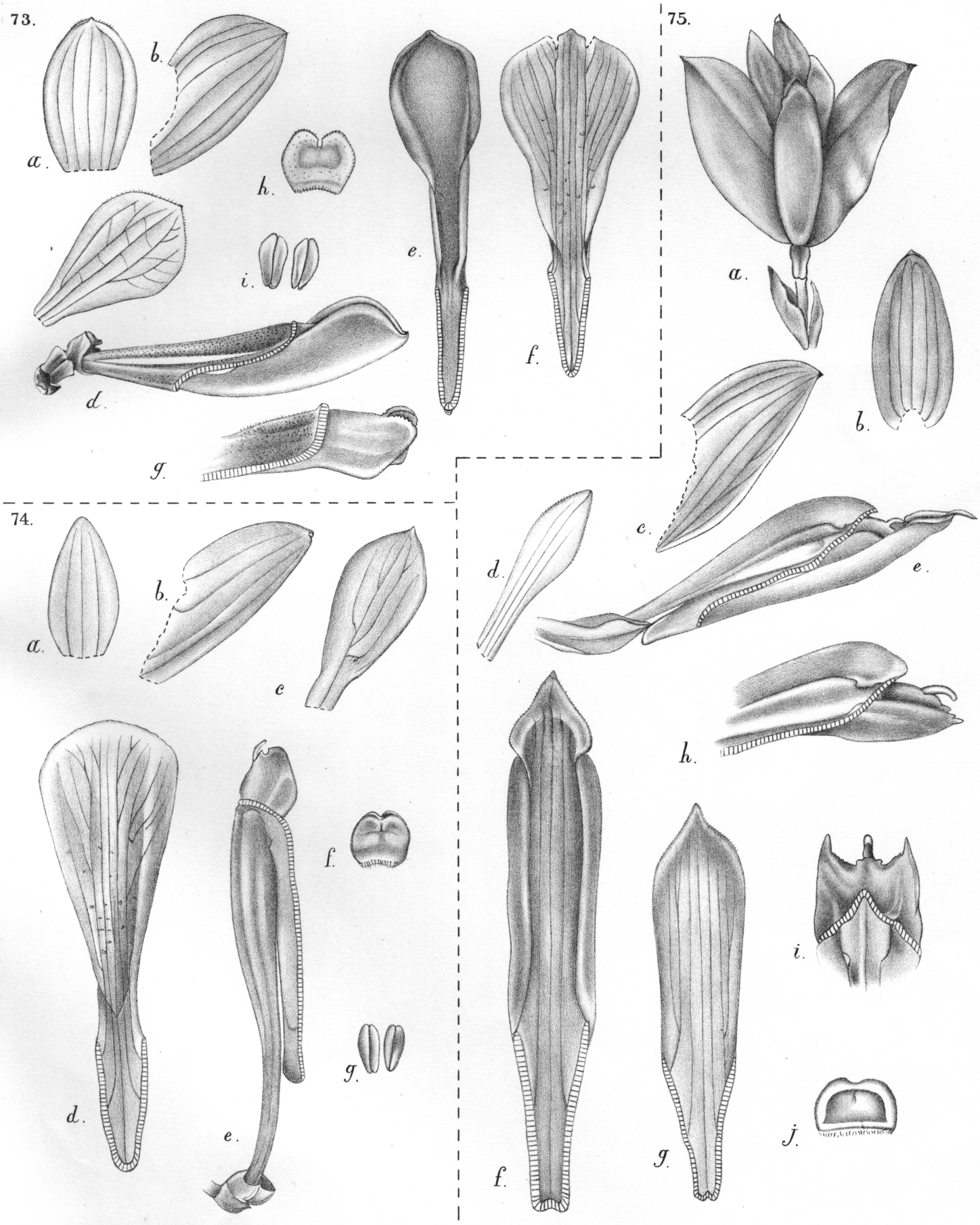
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum supra visum.
f. Idem, explanatum.
g. Gynostemium.
h. Anthera.
i. Pollinia.

LXVI, 74. **Dendrobium lichenicola** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum explanatum.
e. Gynostemium.
f. Anthera.
g. Pollinia.

LXVI, 75. **Dendrobium tenens** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Idem, explanatum.
h. Gynostemium.
i. Idem, a dorso visum.
j. Anthera.


73.
a.
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f.
g.
j.

LXVII, 76. **Dendrobium pseudofrigidum** J. J. S.

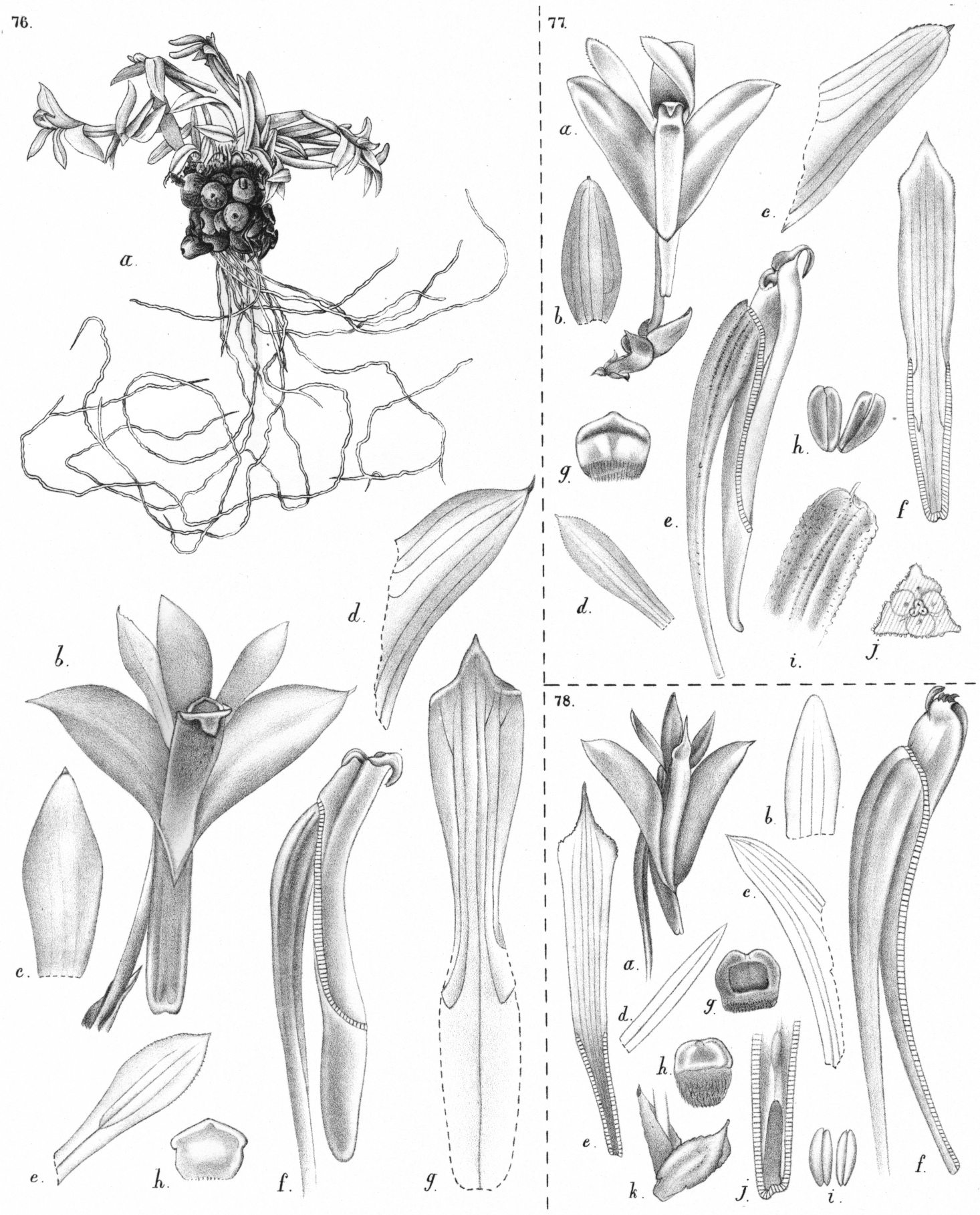
a. Planta florens.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum et gynostemium.
g. Labellum explanatum.
h. Anthera.

LXVII, 77. **Dendrobium cellulosum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Anthera..
h. Pollinia.
i. Ovarium.
j. Idem, sectio transversalis.

LXVII, 78. **Dendrobium erythrocarpum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum explanatum.
f. Gynostemium.
g, *h.* Anthera.
i. Pollinia.
j. Apex pedis gynostemii.
k. Bracteae.


76.
a.
b.
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77.
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e.
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g.
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i.
j.
78.
a.
b.
c.
d.
e.
f.
g.
h.
i.
j.
k.

LXVIII, 79. **Dendrobium igneoviolaceum** J. J. S.

a. Sepalum laterale.
b. Petalum.
c. Labellum et gynostemium.
d. Labellum supra visum.
e. Idem, explanatum.
f. Gynostemium.
g. Anthera.
h. Pollinia.

LXVIII, 80. **Dendrobium monogrammoides** J. J. S.

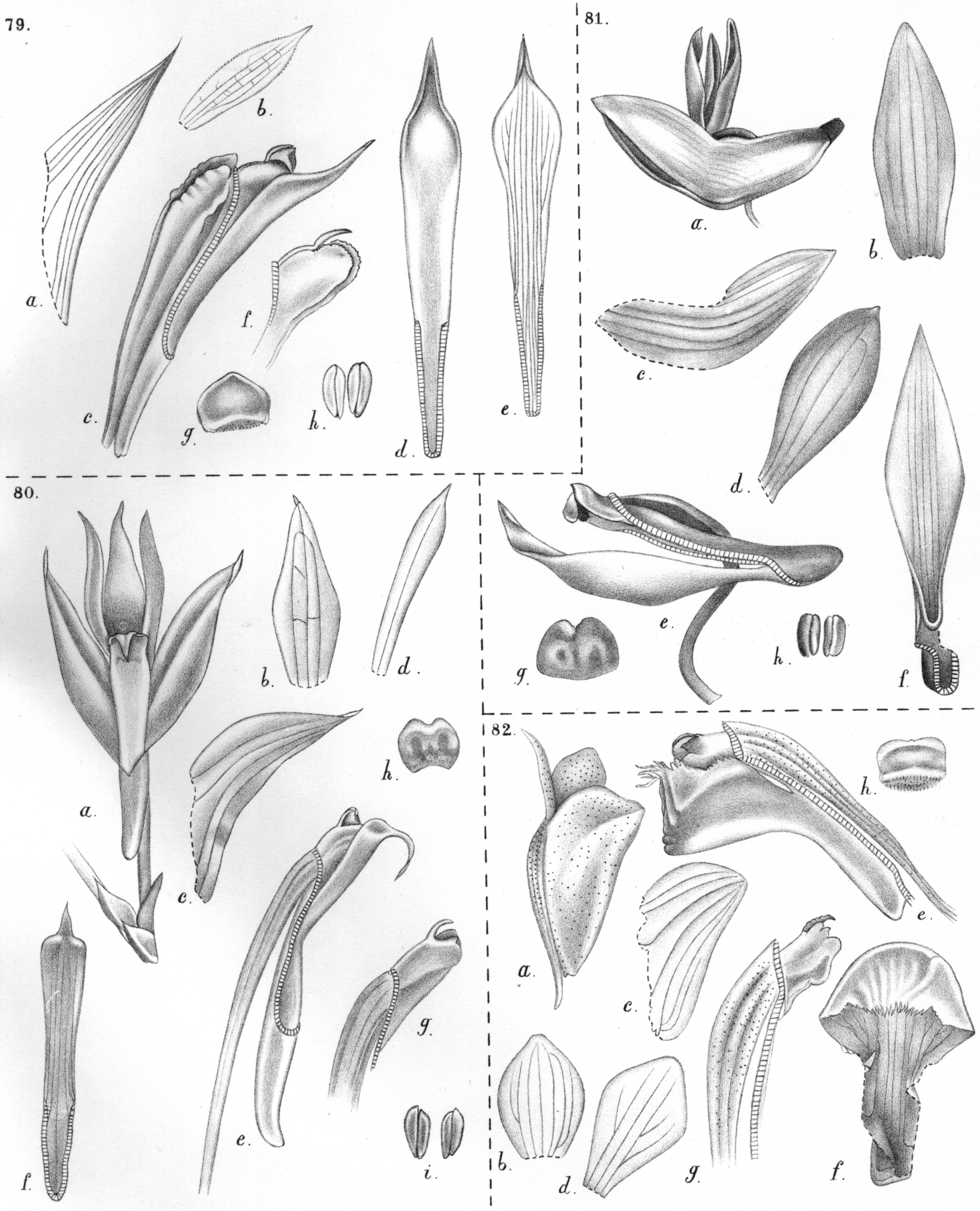
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Pollinia.

LXVIII, 81. **Dendrobium maritimum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Anthera.
h. Pollinia.

LXVIII, 82. **Dendrobium sacculiferum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.


79.
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80.
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b.
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d.
e.
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i.
81.
a.
b.
c.
d.
e.
f.
g.
h.
82.
a.
b.
c.
d.
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LXIX, 83. **Dendrobium Lamii** J. J. S.

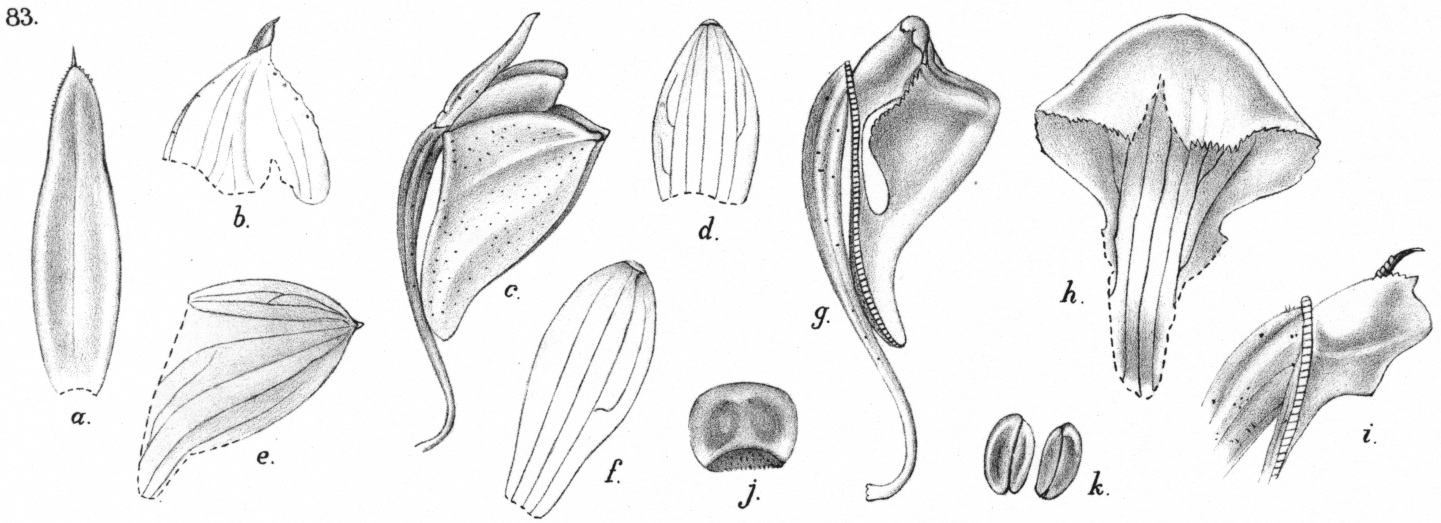
a. Folium.
b. Bractea.
c. Flos.
d. Sepalum dorsale.
e. Sepalum laterale.
f. Petalum.
g. Labellum et gynostemium.
h. Labellum explanatum.
i. Gynostemium subtus visum.
j. Anthera.
k. Pollinia.

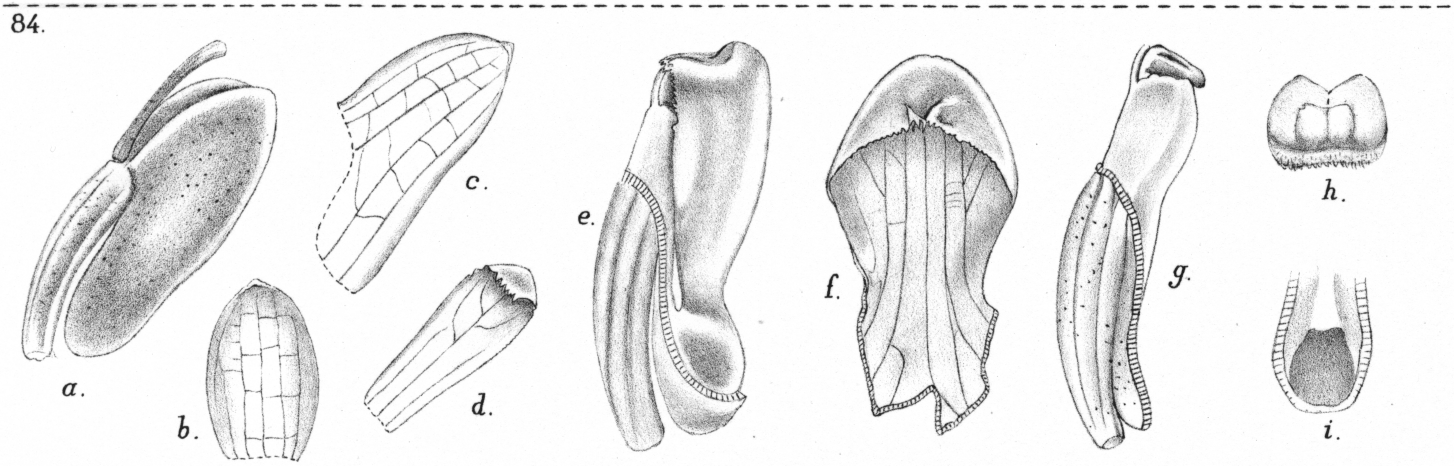
LXIX, 84. **Dendrobium pseudopeloricum** J. J. S.

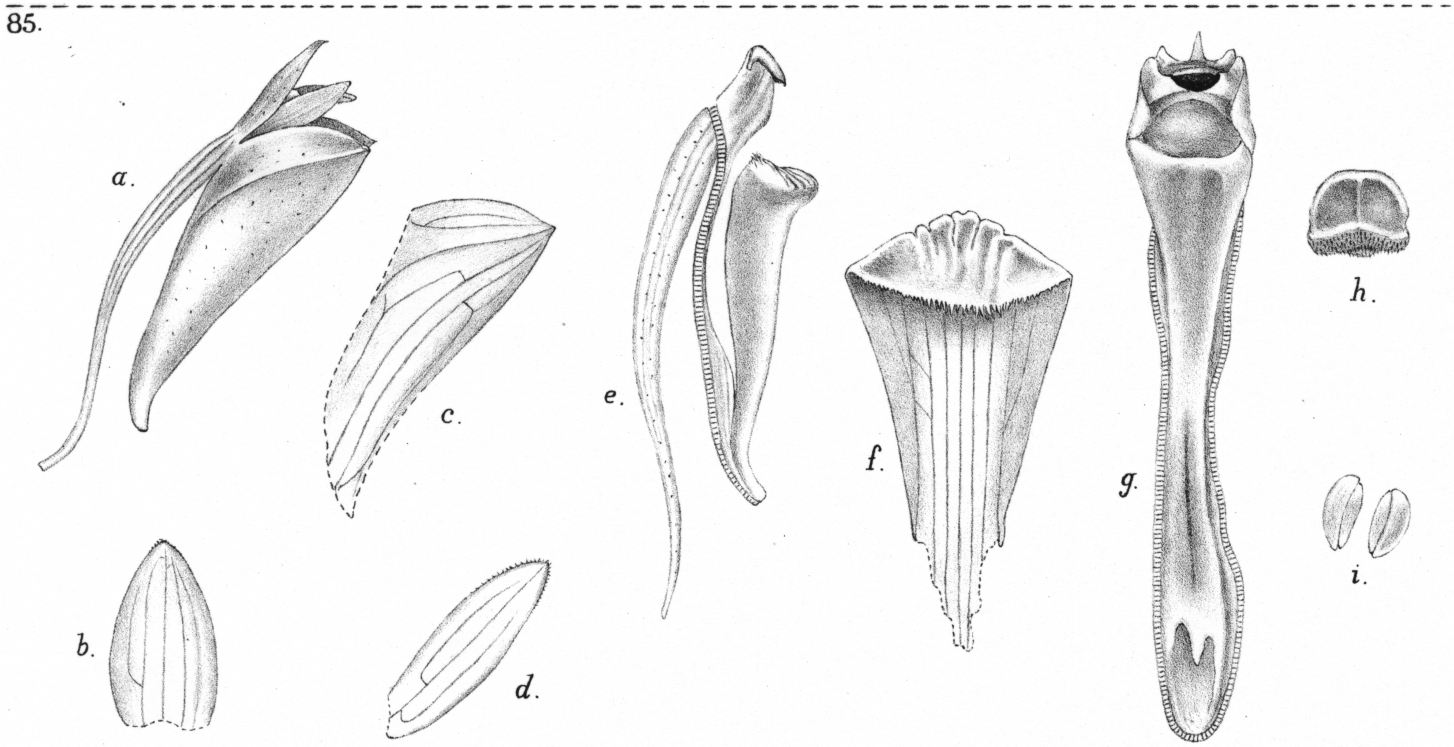
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Apex pedis gynostemii.

LXIX, 85. **Dendrobium convexipes** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium subtus visum.
h. Anthera.
i. Pollinia.


83.
a.
b.
c.
d.
e.
f.
g.
h.
i.
j.
k.


84.
a.
b.
c.
d.
e.
f.
g.
h.
i.


85.
a.
b.
c.
d.
e.
f.
g.
h.
i.

LXX, 86. **Dendrobium fuligineum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum.
e. Idem, explanatum.
f. Gynostemium.
g. Idem, subtus visum.
h. Anthera.
i. Pollinia.

LXX, 87. **Pedilochilus humile** J. J. S.

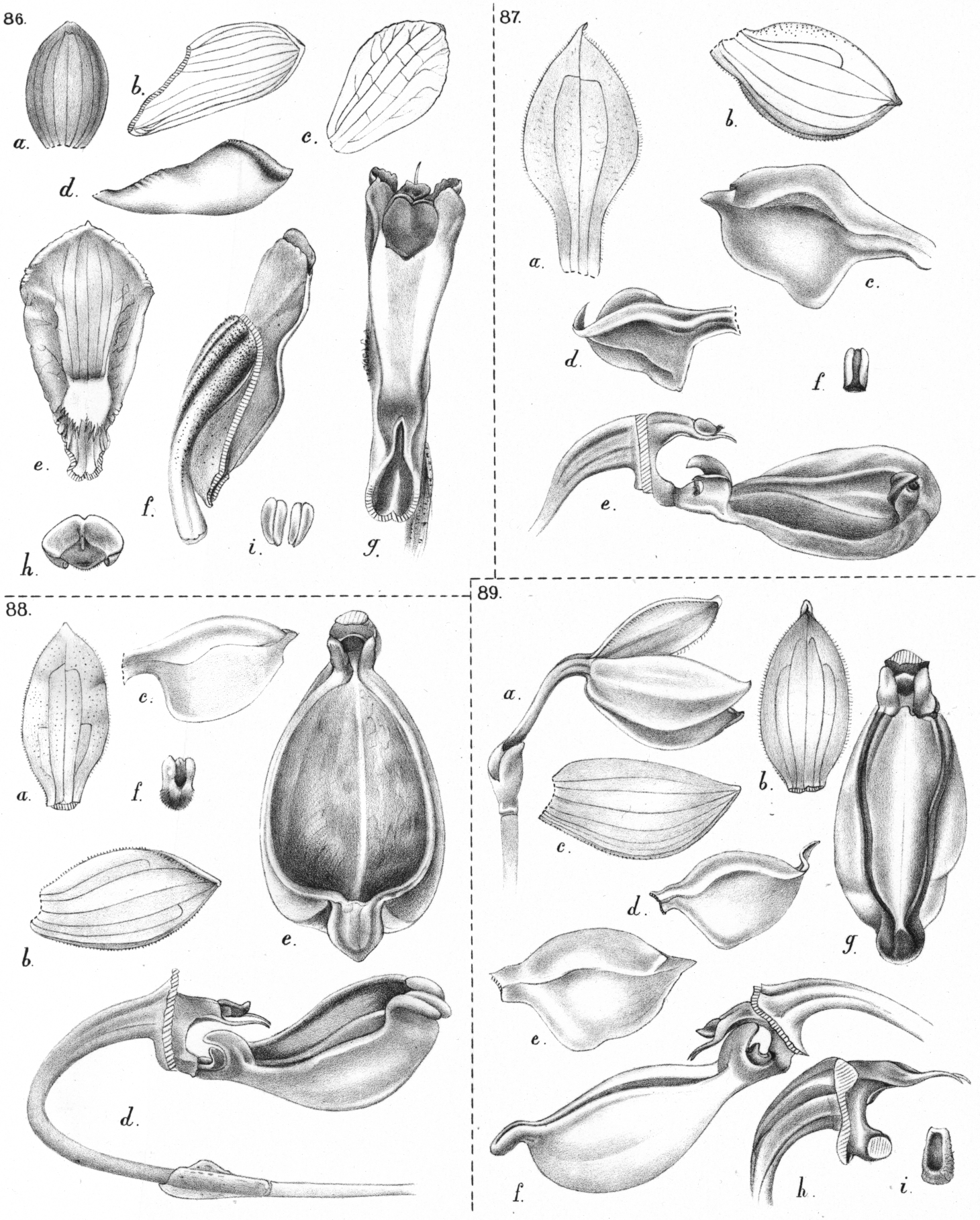
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Idem, explanatum.
e. Labellum et gynostemium.
f. Anthera.

LXX, 88. **Pedilochilus obovatum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum supra visum.
f. Anthera.

LXX, 89. **Pedilochilus terrestre** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Idem, explanatum.
f. Labellum et gynostemium.
g. Labellum supra visum.
h. Gynostemium.
i. Anthera.


86.
a.
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f.
g.
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87.
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c.
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e.
f.
88.
a.
b.
c.
d.
e.
f.
89.
a.
b.
c.
d.
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f.
g.
h.
i.

LXXI, 90. **Bulbophyllum heliophilum** J. J. S.

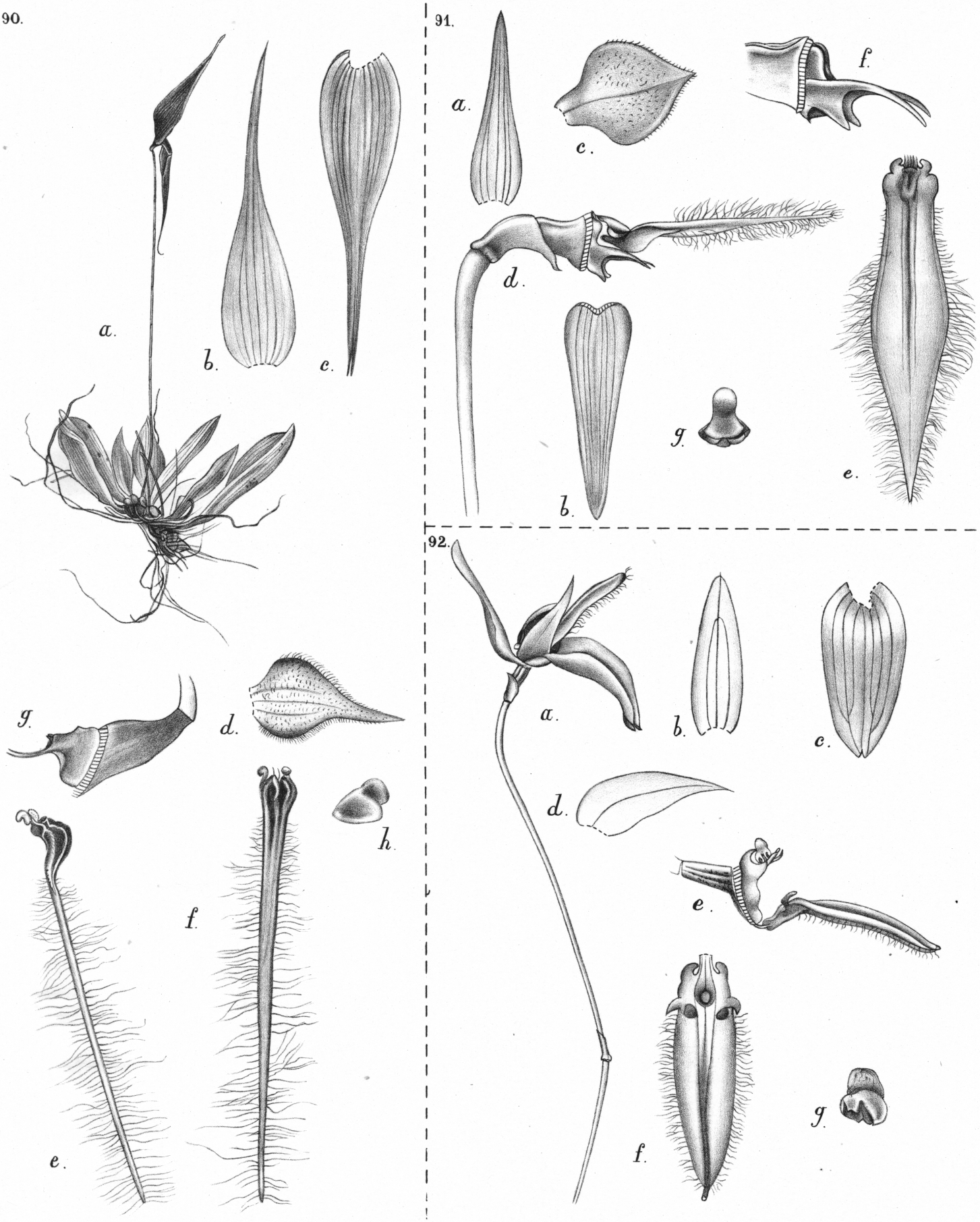
a. Planta florens.
b. Sepalum dorsale.
c. Sepala lateralia.
d. Petalum.
e. Labellum a latere visum.
f. Idem, supra visum.
g. Gynostemium.
h. Anthera.

LXXI, 91. **Bulbophyllum quadrisubulatum** J. J. S.

a. Sepalum dorsale.
b. Sepala lateralia.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum supra visum.
f. Gynostemium.
g. Anthera.

LXXI, 92. **Bulbophyllum quadrifalciculatum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepala lateralia.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Anthera.



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LXXII, 93. **Bulbophyllum serrulatifolium** J. J. S.

a. Apex folii.
b. Flos.
c. Sepalum dorsale.
d. Sepala lateralia.
e, *f*. Petala.
g. Labellum et gynostemium.
h. Labellum explanatum.
i. Anthera.
j. Apex pedis gynostemii.

LXXII, 94. **Bulbophyllum nigrilabium** Schltr.

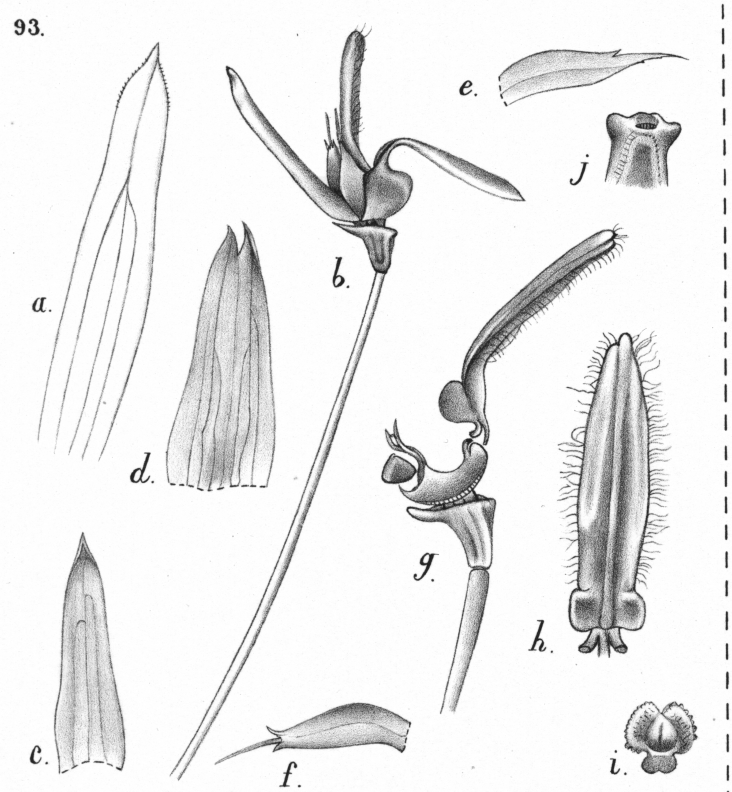
a. Flos.
b. Sepalum dorsale.
c. Sepala lateralia.
d. Petalum.
e. Labellum.
f. Idem, explanatum.
g. Gynostemium.

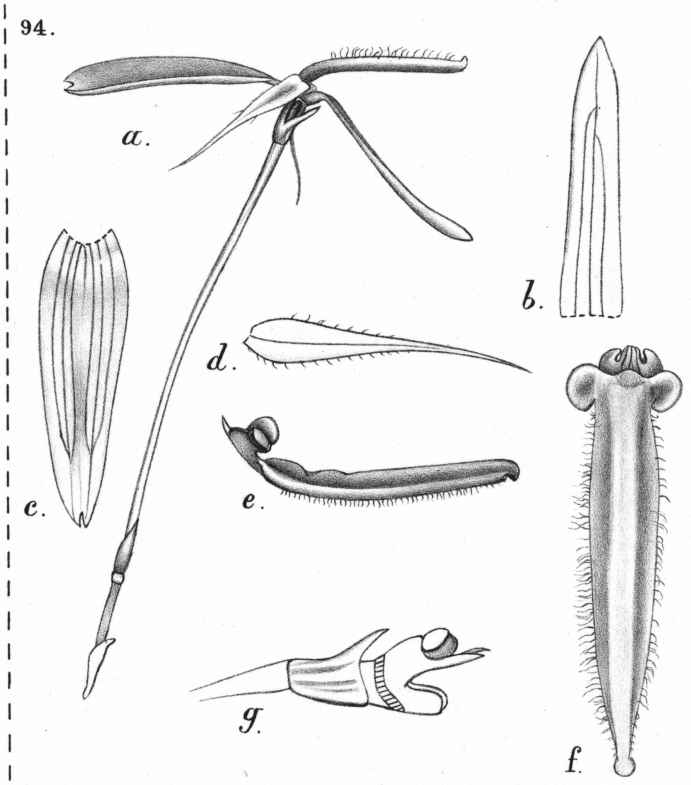
LXXII, 95. **Bulbophyllum torquatum** J. J. S.

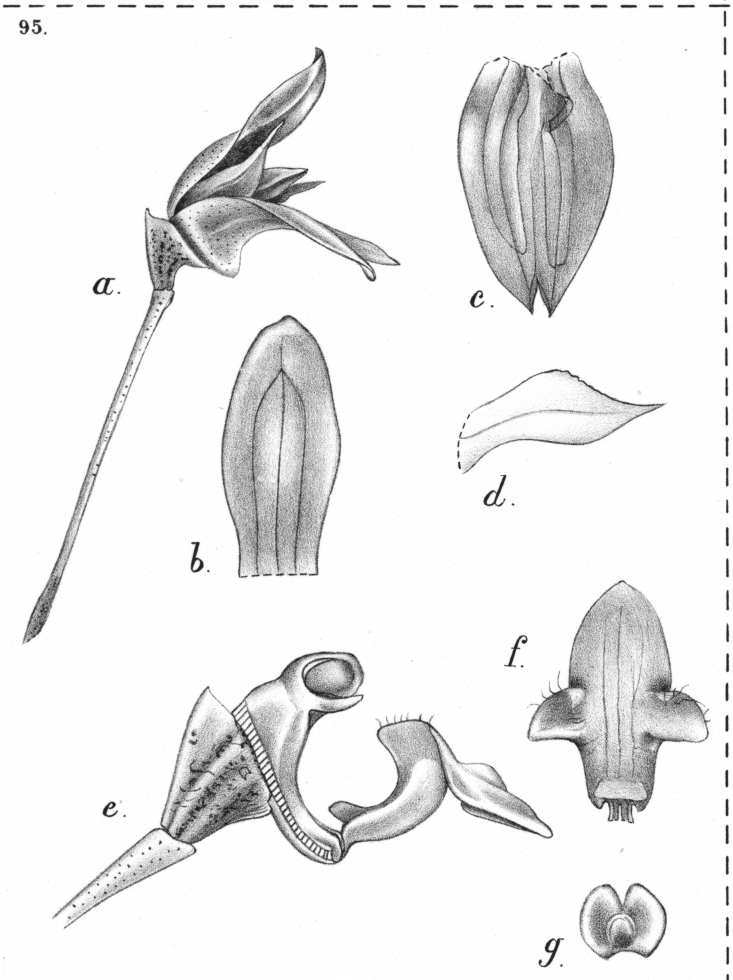
a. Flos.
b. Sepalum dorsale.
c. Sepala lateralia.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Anthera.

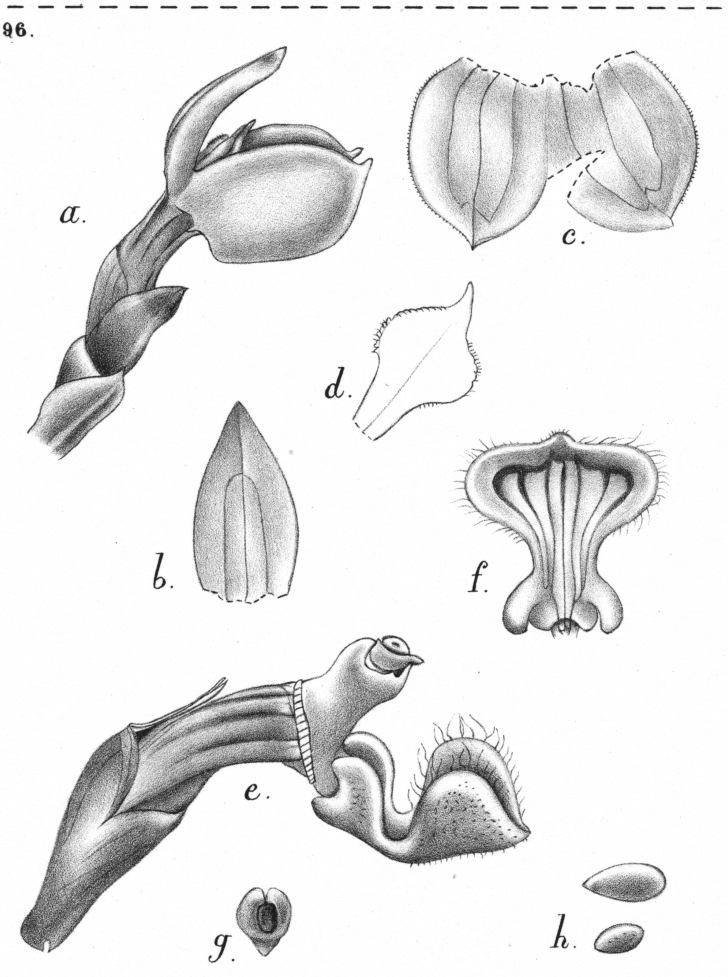
LXXII, 96. **Bulbophyllum saccolabiodes** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepala lateralia.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Anthera.
h. Pollinia.


93.
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94.
a.
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95.
a.
b.
c.
d.
e.
f.
g.


96.
a.
b.
c.
d.
e.
f.
g.
h.

LXXIII, 97. **Bulbophyllum tectipetalum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum supra visum.
f. Anthera.

LXXIII, 98. **Bulbophyllum idenburgense** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c, *d.* Petala.
e. Labellum et gynostemium.
f. Pes gynostemii.
g. Anthera.

LXXIII, 99. **Bulbophyllum ensiculiforum** J. J. S.

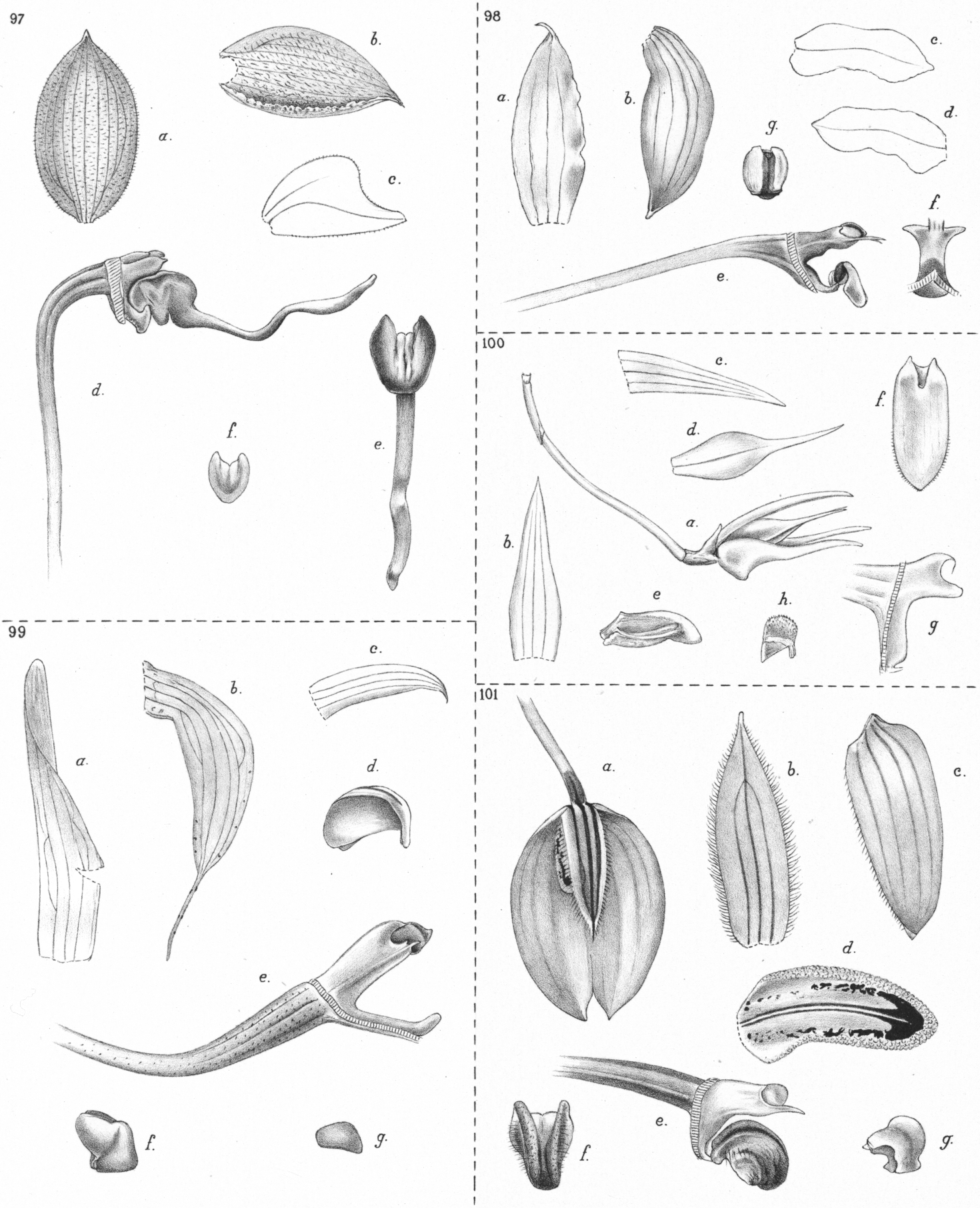
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum.
e. Gynostemium.
f. Anthera.
g. Pollinia.

LXXIII, 100. **Bulbophyllum flavicolor** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.

LXXIII, 101. **Bulbophyllum Debruynii** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Anthera.



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LXXIV, 102. **Bulbophyllum Melilotus** J. J. S.

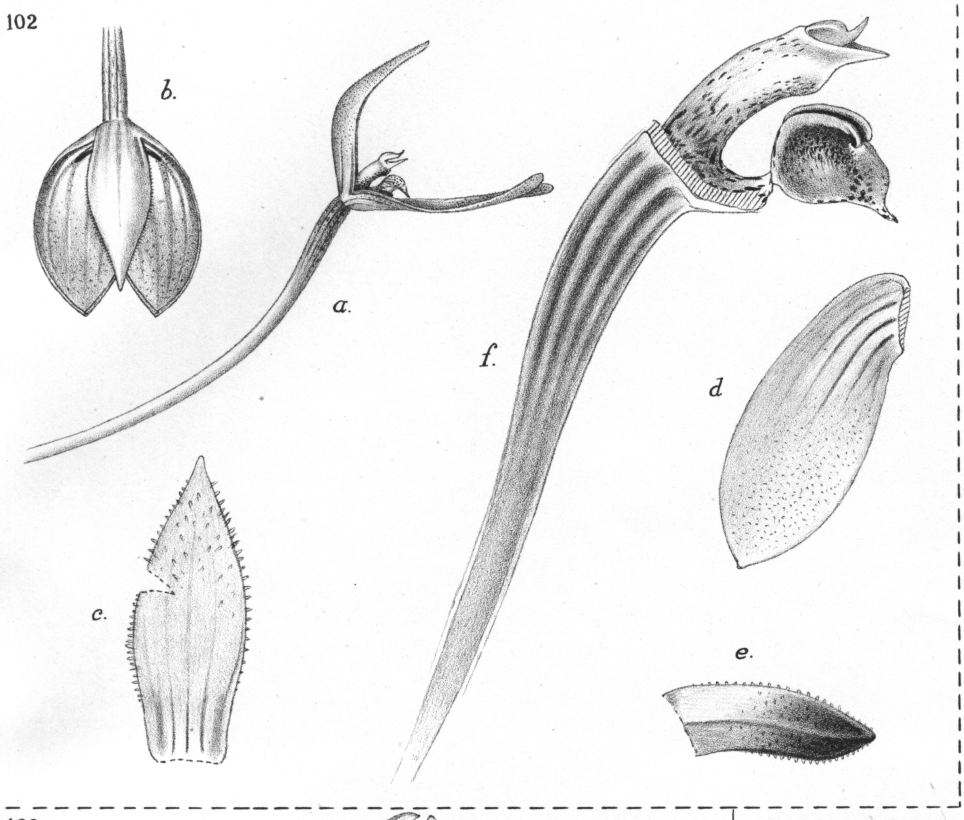
a. Flos a latere visus.
b. Idem, supra visus.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum et gynostemium.

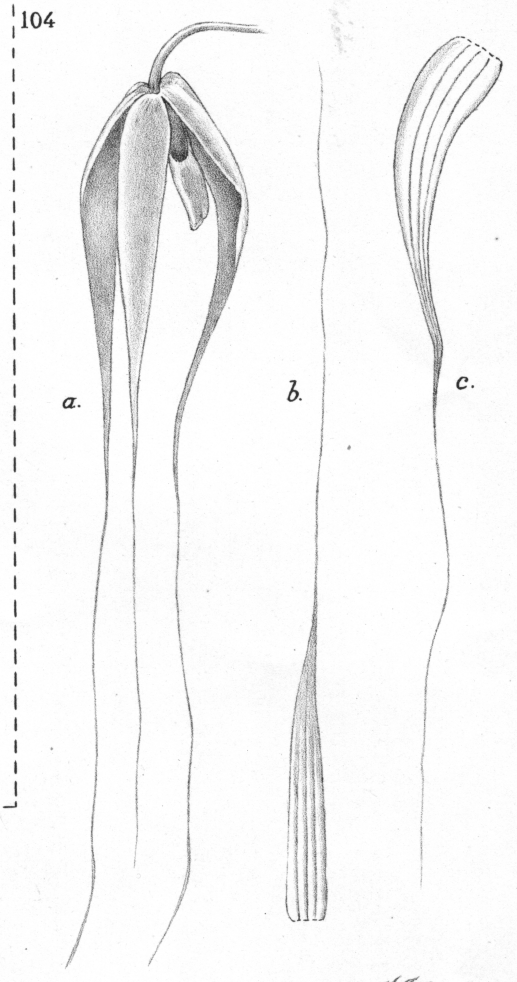
LXXIV, 103. **Bulbophyllum calceilabium** J. J. S.

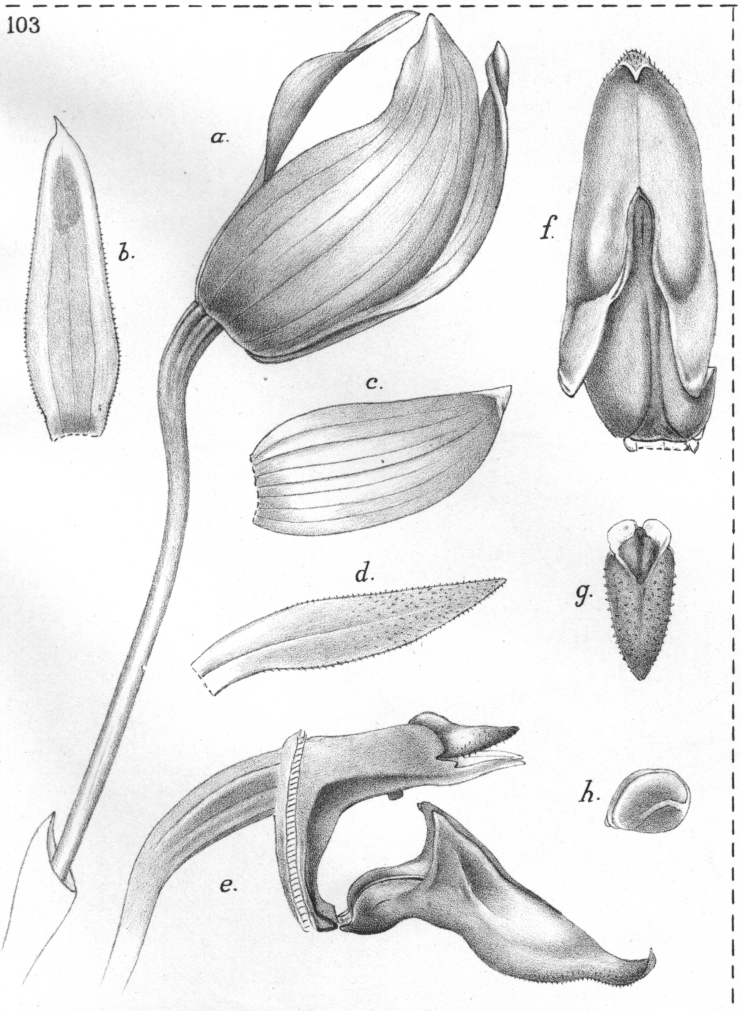
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Anthera.
h. Pollinia.

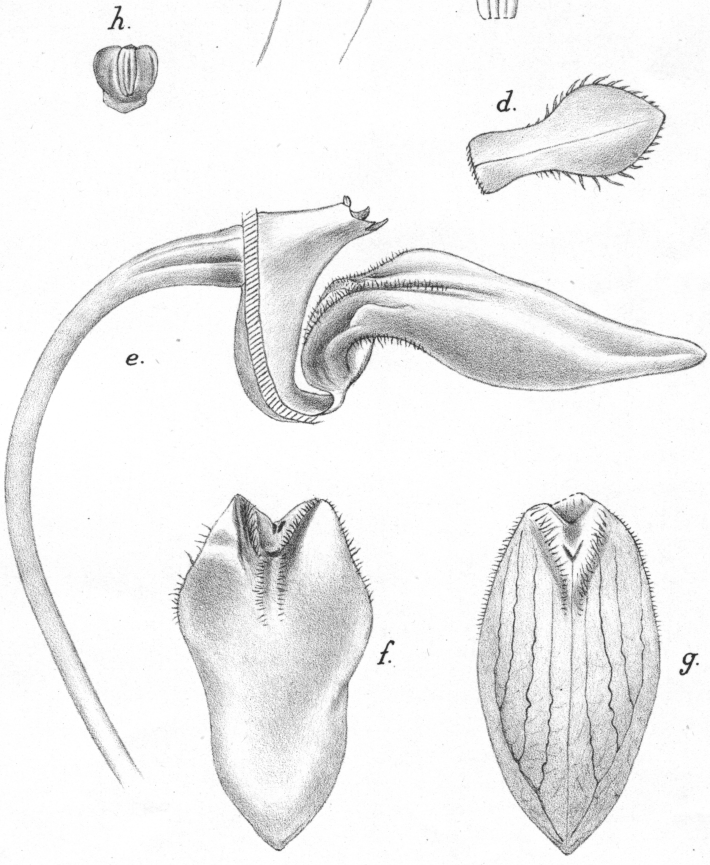
LXXIV, 104. **Bulbophyllum Lamii** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Anthera.
h. Pollinia.


102
b.
a.
f.
d.
c.
e.


104
a.
b.
c.


103
a.
b.
c.
d.
e.
f.
g.
h.


h.
d.
e.
f.
g.

LXXV, 105. **Bulbophyllum commissibulbum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Idem, explanatum.
h. Anthera.

LXXV, 106. **Bulbophyllum cochlioides** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Anthera.
h. Pollinia.

LXXV, 107. **Bulbophyllum levidense** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Anthera.
h. Pollinia.

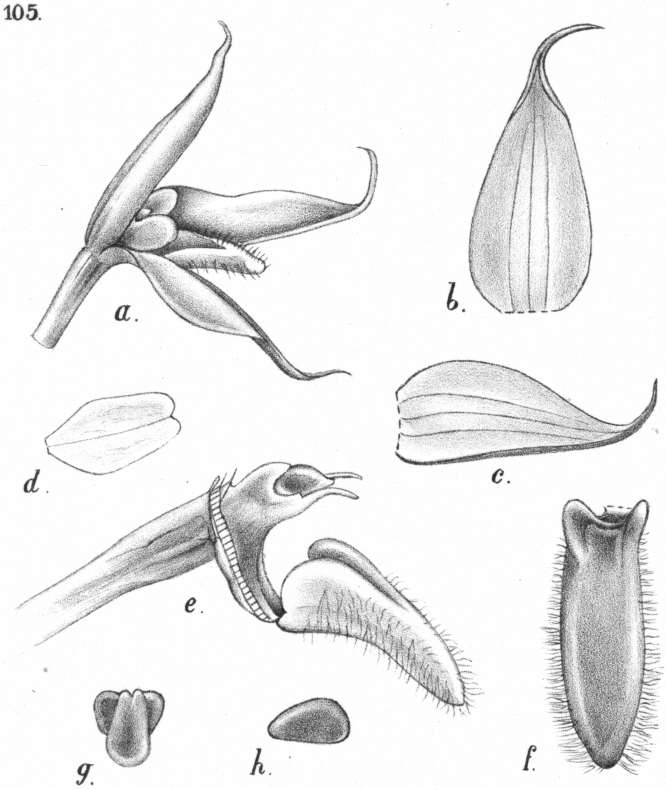
LXXV, 108. **Bulbophyllum korimense** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Anthera.
h. Pollinia.

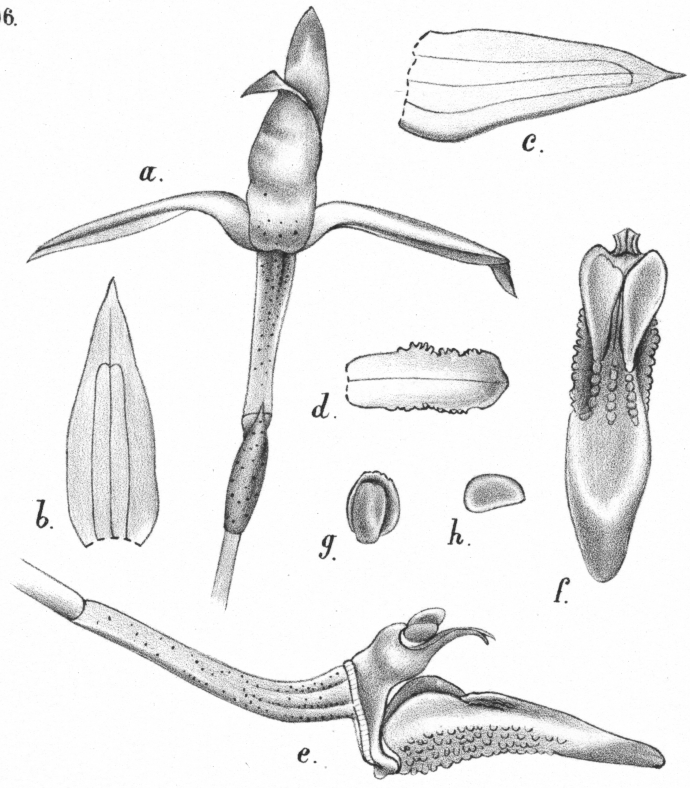
LXXV, 109. **Bulbophyllum riparium** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Idem, supra visum.

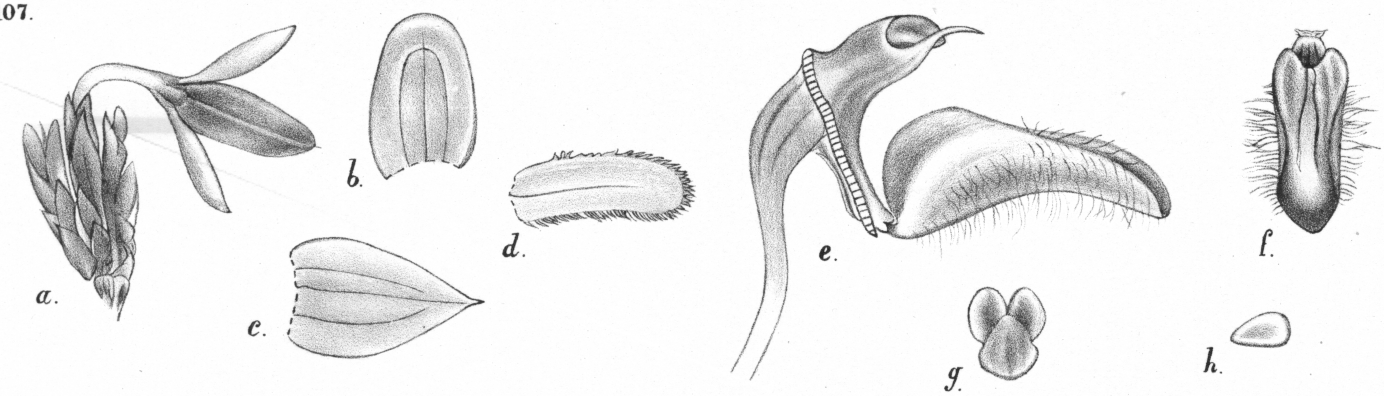
105.



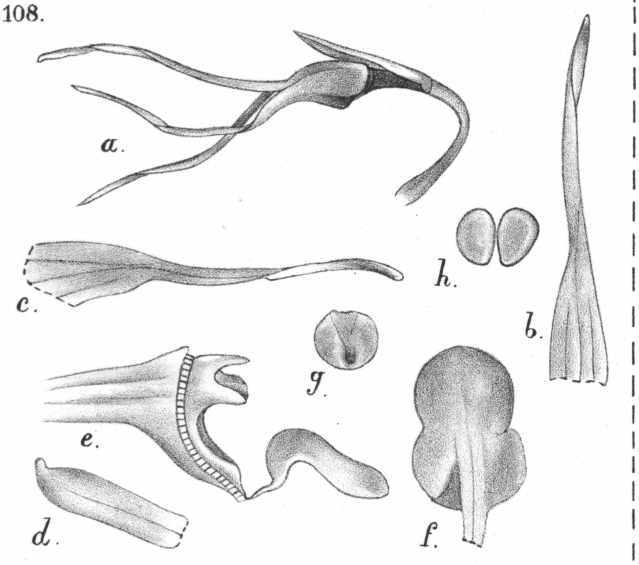
106.



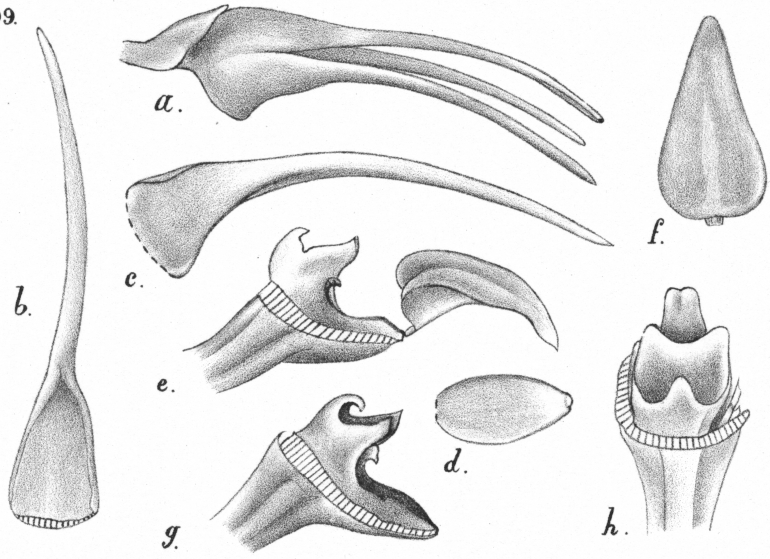
107.



108.



109.



LXXVI, 110. **Bulbophyllum linearipetalum** J. J. S.

a. Inflorescentia.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum et gynostemium.
g. Labellum supra visum.
h. Anthera.

LXXVI, 111. **Bulbophyllum sculptum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum supra visum.
f. Anthera.

LXXVI, 112. **Bulbophyllum cavibulbum** J. J. S.

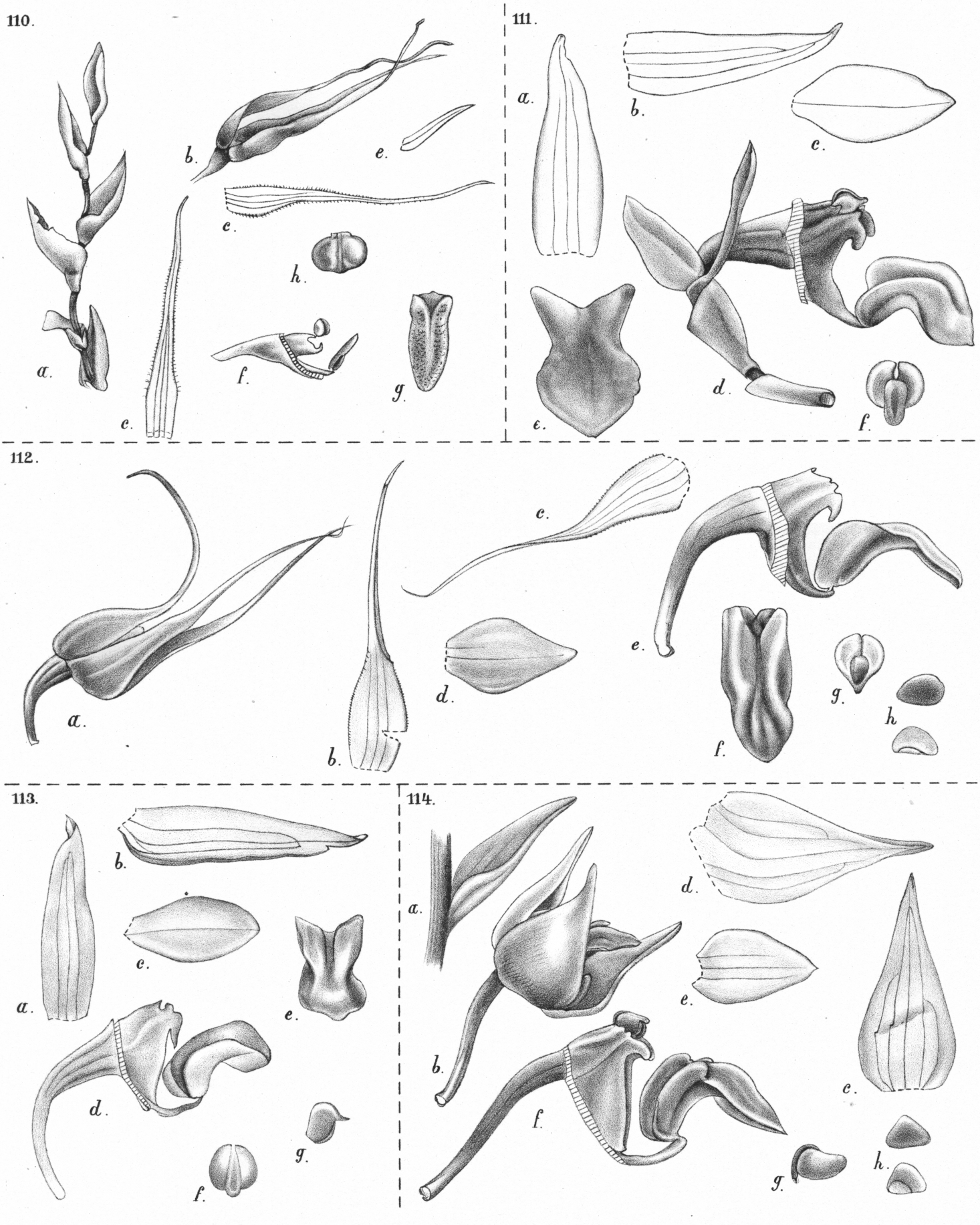
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Anthera.
h. Pollinia.

LXXVI, 113. **Bulbophyllum acutibrachium** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum supra visum.
f. Anthera.
g. Idem, a latere visa.

LXXVI, 114. **Bulbophyllum disjunctibulbum** J. J. S.

a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum et gynostemium.
g. Anthera.
h. Pollinia.



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LXXVII, 115. **Bulbophyllum squamiferum** J. J. S.

a. Sepalum dorsale.
b. Sepala lateralia.
c. Petalum.
d. Labellum.
e. Idem, antice visum.
f. Gynostemium.
g. Anthera.
h. Par polliniorum.

LXXVII, 116. **Bulbophyllum manifestans** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum.
e. Idem, antice visum.
f. Gynostemium.
g. Anthera.

LXXVII, 117. **Bulbophyllum solutisepalum** J. J. S.

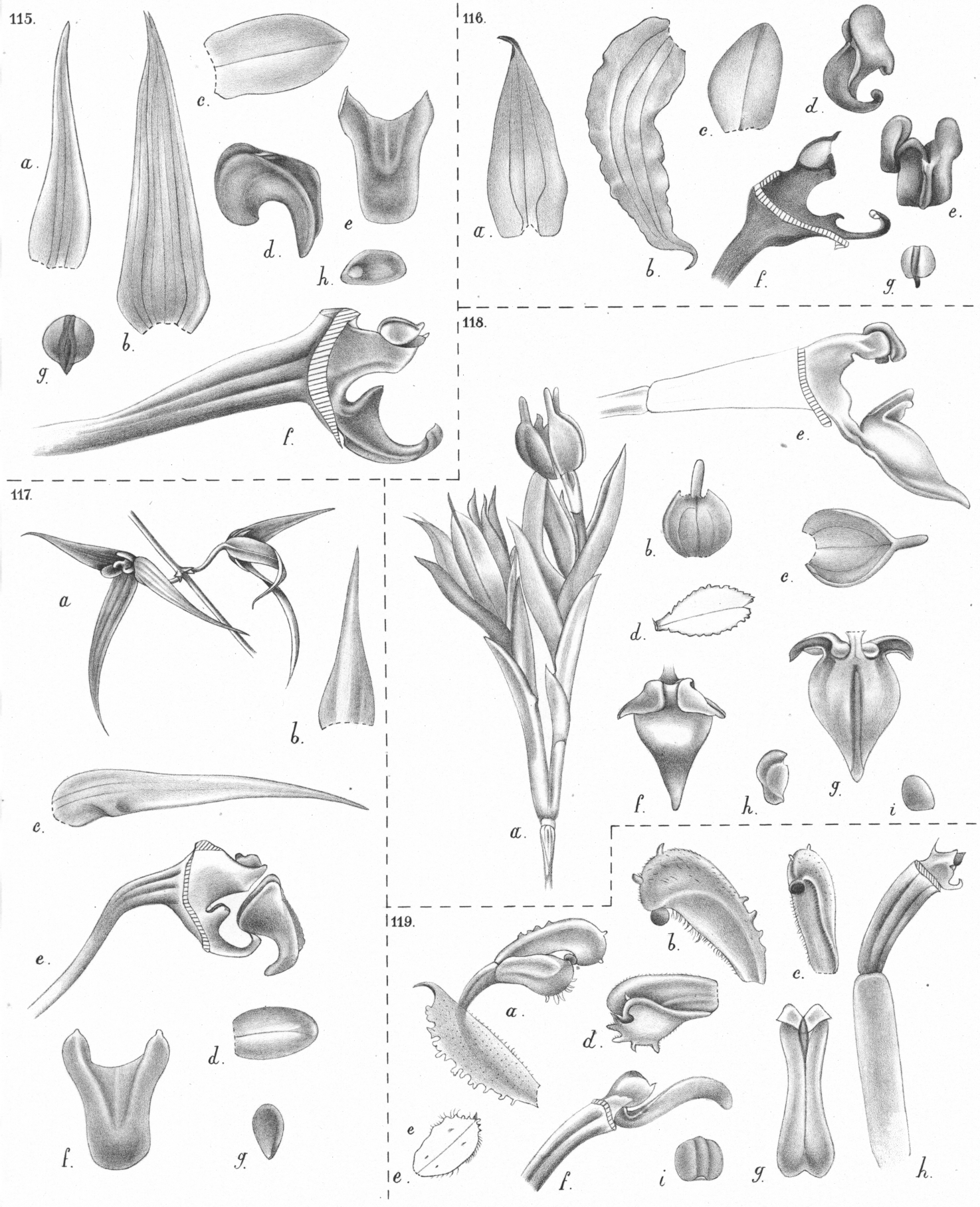
a. Flores.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum antice visum.
g. Anthera.

LXXVII, 118. **Bulbophyllum lonchophyllum** Schltr.

a. Inflorescentia.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Gynostemium.
h. Anthera.
i. Pollinia.

LXXVII, 119. **Bulbophyllum navigioliferum.** J. J. S.

a. Flos cum bractea.
b. Sepalum dorsale a latere visum.
c. Idem, antice visum.
d. Sepalum laterale.
e. Petalum.
f. Labellum et gynostemium.
g. Labellum supra visum.
h. Gynostemium.
i. Anthera.


115.
a.
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c.
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e
h.
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116.
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b.
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118.
e.
a.
b.
c.
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f.
h.
g.
i
117.
a
b.
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119.
a.
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c.
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LXXVIII, 120. **Bulbophyllum sarcodanthum** Schltr.

a. Planta florens.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Anthera.

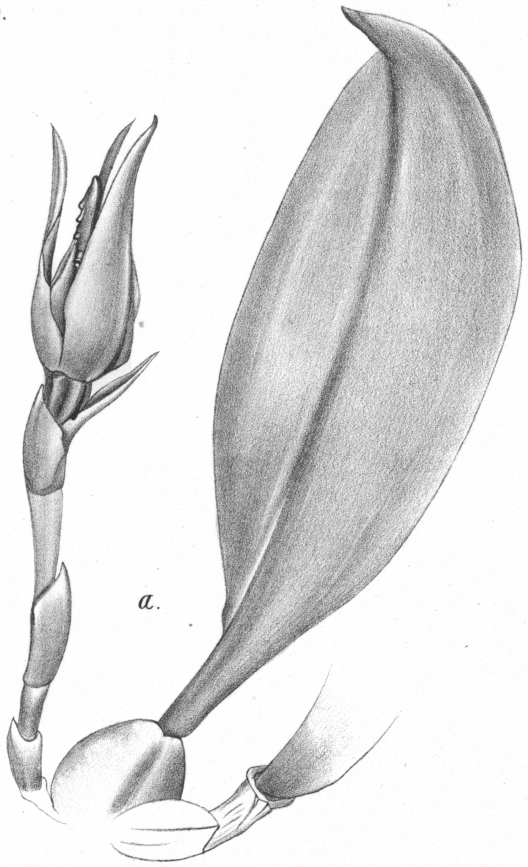
LXXVIII, 121. **Bulbophyllum foetidum** Schltr. var. **grandiflorum** J. J. S.

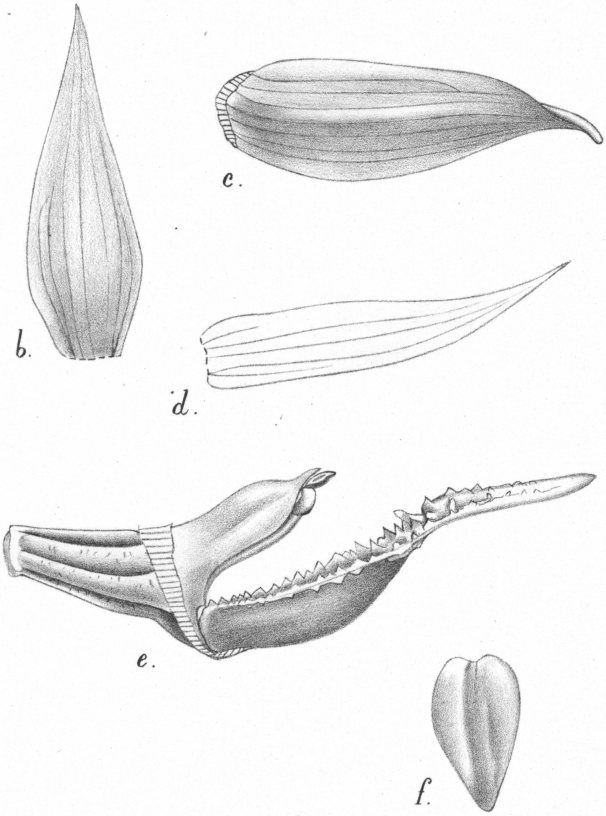
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Pollinia.

LXXVIII, 122. **Bulbophyllum unitubum** J. J. S.

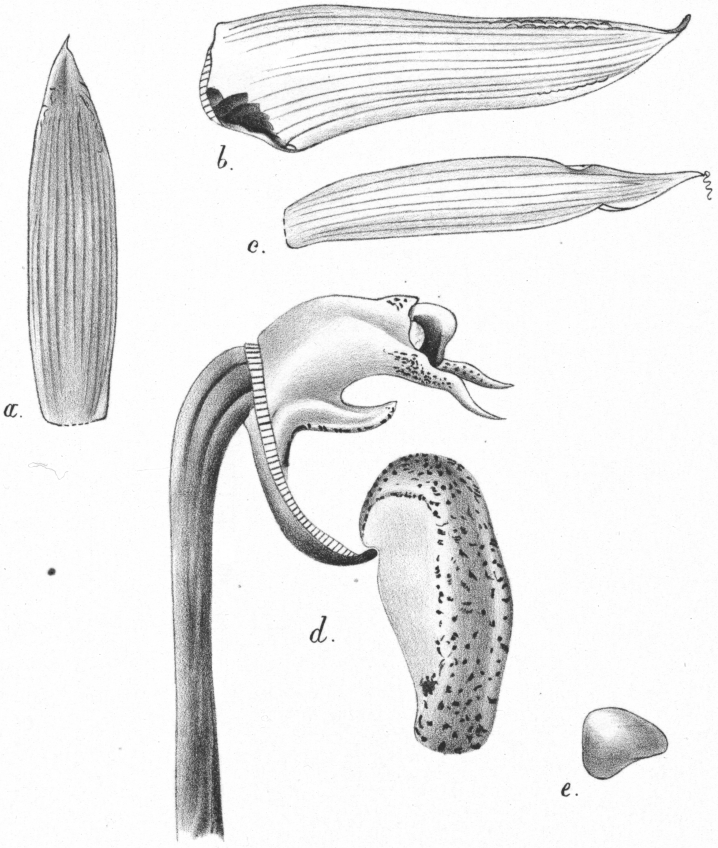
a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum.
e. Idem, antice visum.
f. Gynostemium.
g. Anthera.
h. Pollinia.

120.

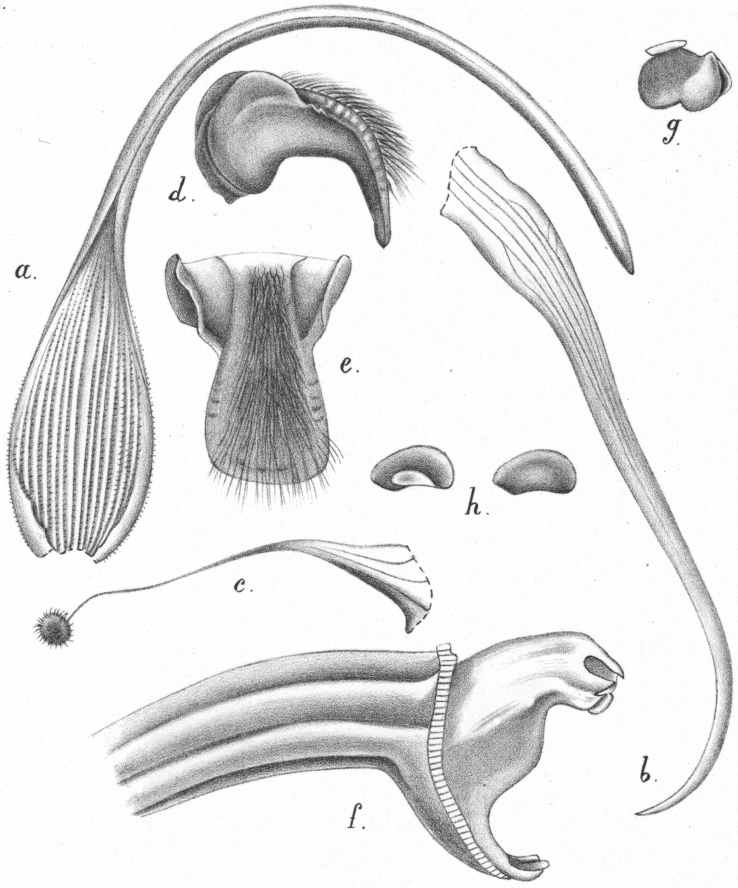




121.



122.



LXXIX, 123. **Bulbophyllum arfakianum** Krzl.

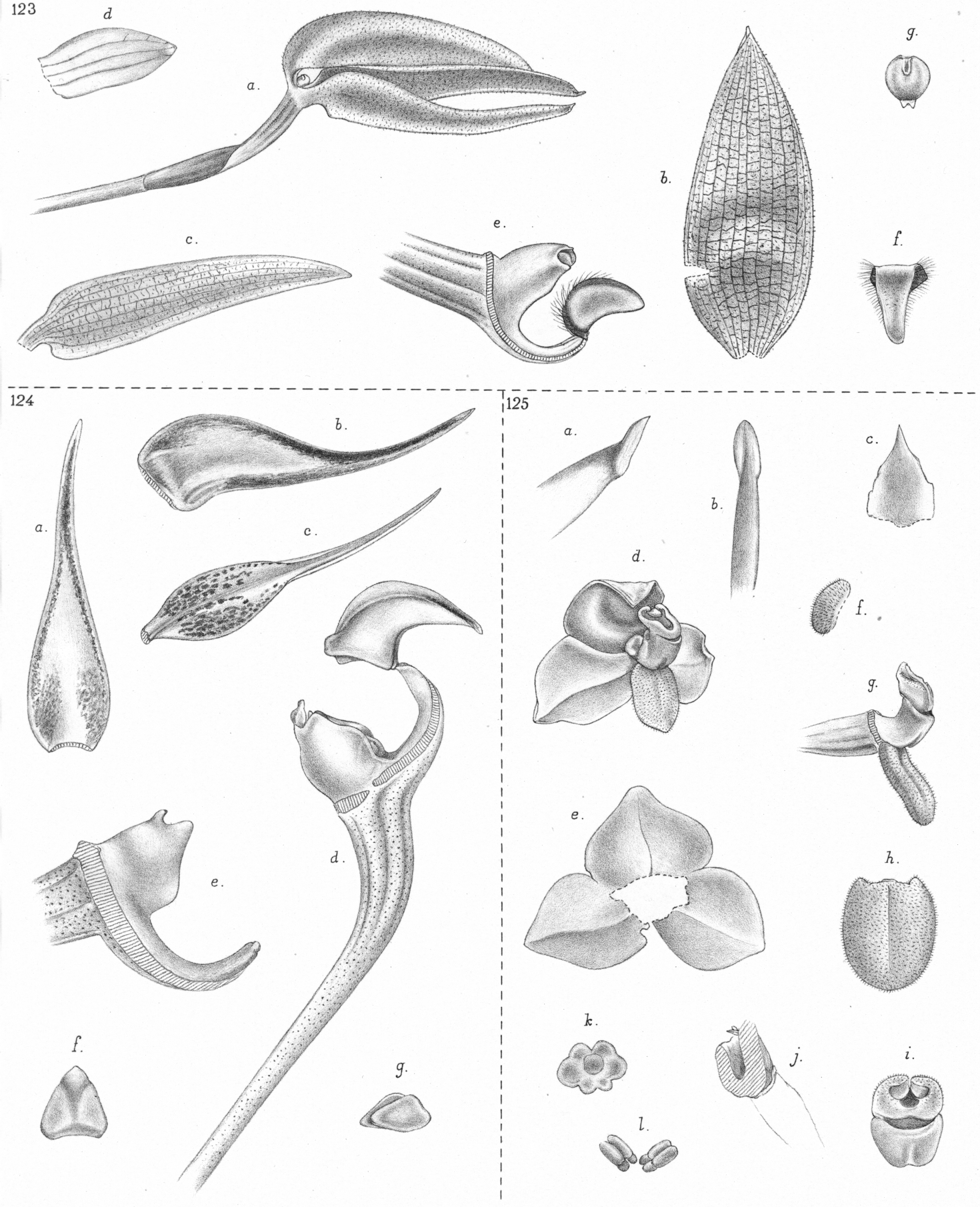
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum antice visum.
g. Anthera.

LXXIX, 124. **Bulbophyllum Gjellerupii** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Gynostemium.
f. Anthera.
g. Pollinia.

LXXIX, 125. **Chitonanthera trigona** J. J. S.

a. Apex folii a latere visus.
b. Idem, supra visus.
c. Bractea.
d. Flos.
e. Sepala.
f. Petalum.
g. Labellum et gynostemium.
h. Labellum.
i. Gynostemium antice visum.
j. Cuculli gynostemii sectio longitudinalis.
k. Anthera.
l. Pollinia.


123
d
a.
g.
b.
e.
c.
f.
124
b.
a.
c.
d.
e.
f.
g.
125
a.
b.
c.
d.
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k.
j.
i.
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LXXX, 126. **Chitonanthera suborbicularis** J. J. S.

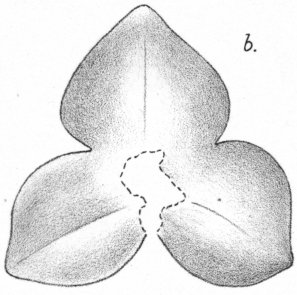
a. Plantae florentes.
b. Sepala.
c. Petalum.
d. Labellum.
e. Gynostemium.
f. Idem, antice visum.
g. Anthera supra visa.
h. Idem, subtus visa.

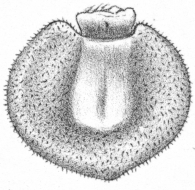
LXXX, 127. **Chitonanthera obovata** J. J. S.

a. Plantae florentes.
b. Ramulus.
c. Sepala.
d, *e.* Petala.
f. Labellum et gynostemium.
g. Labellum explanatum.
h. Gynostemium.
i. Anthera.

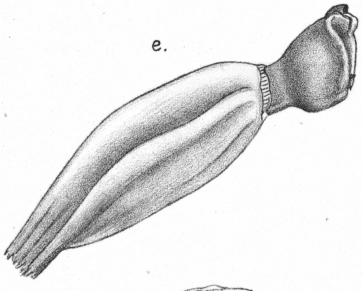
126



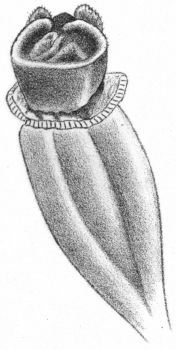










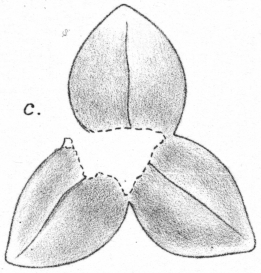




127

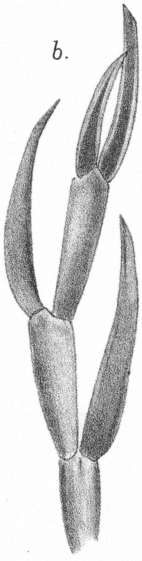


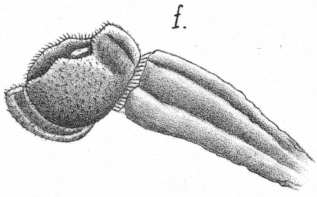




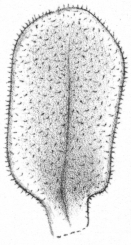


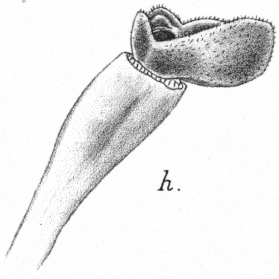












LXXXI, 128. **Chitonanthera calceiformis** J. J. S.

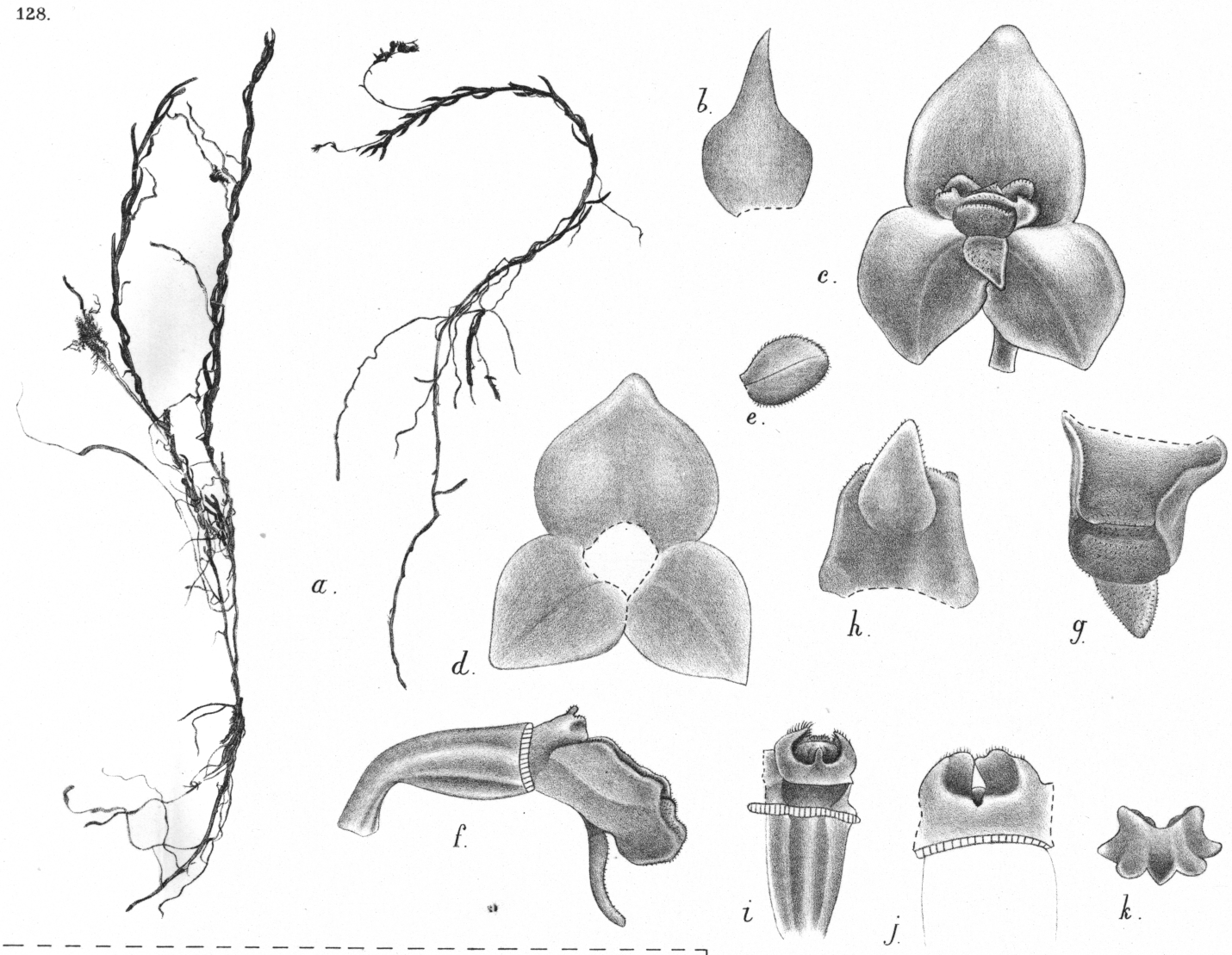
a. Plantae florentes.
b. Bractea.
c. Flos.
d. Sepala.
e. Petalum.
f. Labellum et gynostemium.
g. Labellum cum cuculla gynostemii.
h. Idem, subtus visum.
i. Gynostemium subtus visum absque cucullo.
j. Idem, supra visum.
k. Anthera.

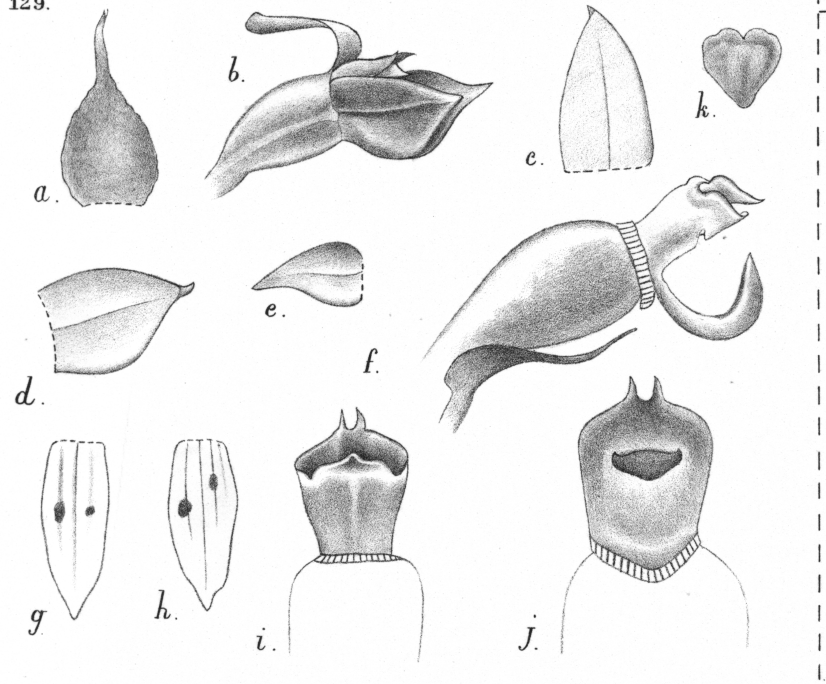
LXXXI, 129. **Octarrhena cymbiformis** J. J. S.

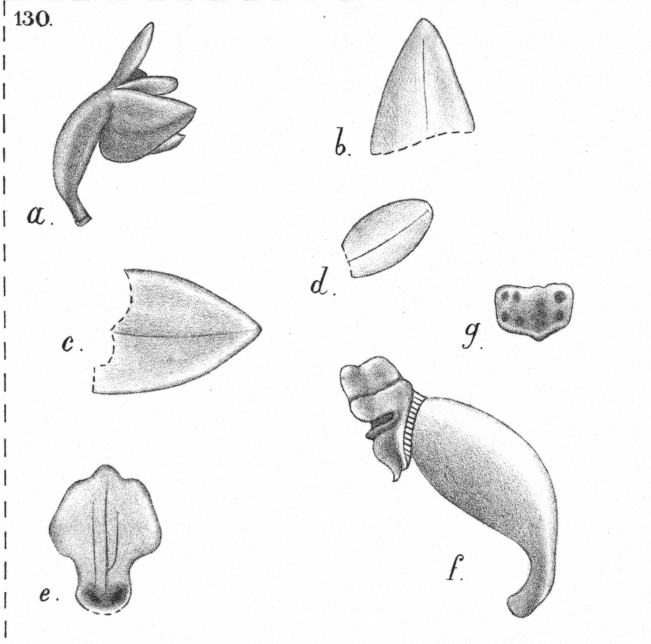
a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum et gynostemium.
g, *h*. Labella explanata.
i. Gynostemium supra visum.
j. Idem, subtus visum.
k. Anthera.

LXXXI, 130. **Phreatia quinquelobulata** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera.


128.
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f.
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h.
i.
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k.


129.
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b.
c.
d.
e.
f.
g.
h.
i.
J.
k.


130.
a.
b.
c.
d.
e.
f.
g.

LXXXII, 131. **Phreatia nutans** J. J. S.

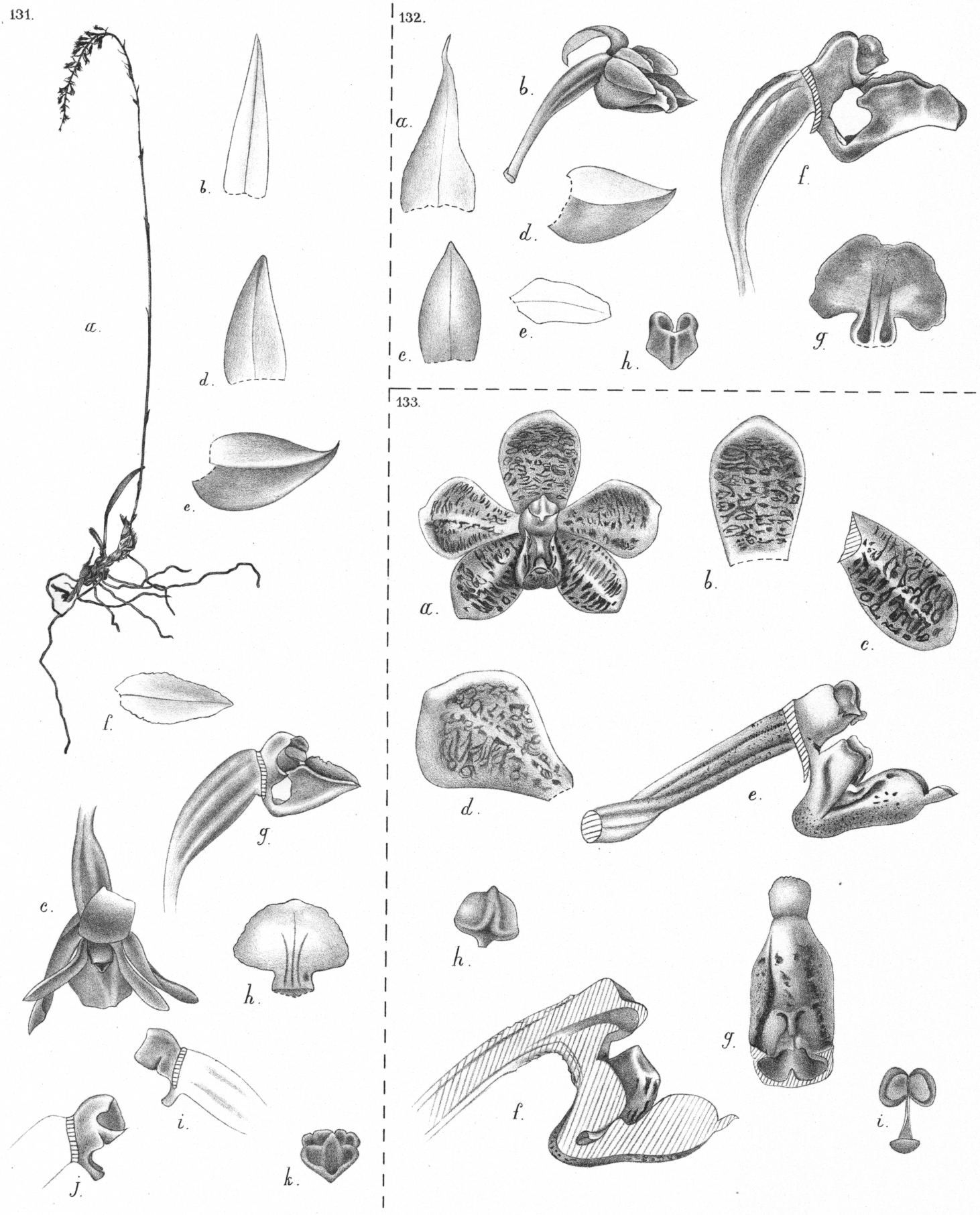
a. Planta florens.
b. Bractea.
c. Flos.
d. Sepalum dorsale.
e. Sepalum laterale.
f. Petalum.
g. Labellum et gynostemium.
h. Labellum explanatum.
i, *j*. Gynostemium.
k. Anthera.

LXXXII, 132. **Phreatia renilabris** J. J. S.

a. Bractea.
b. Flos.
c. Sepalum dorsale.
d. Sepalum laterale.
e. Petalum.
f. Labellum et gynostemium.
g. Labellum explanatum.
h. Anthera.

LXXXII, 133. **Vandopsis pantherina** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Idem, sectio longitudinalis.
g. Lobus intermedius supra visus.
h. Anthera.
i. Pollinarium.


131.
a.
b.
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g.
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h.
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132.
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b.
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f.
g.
c.
h.
133.
a.
b.
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g.
f.
i.

LXXXIII, 134. **Hymenorchis glomeroides** J. J. S.

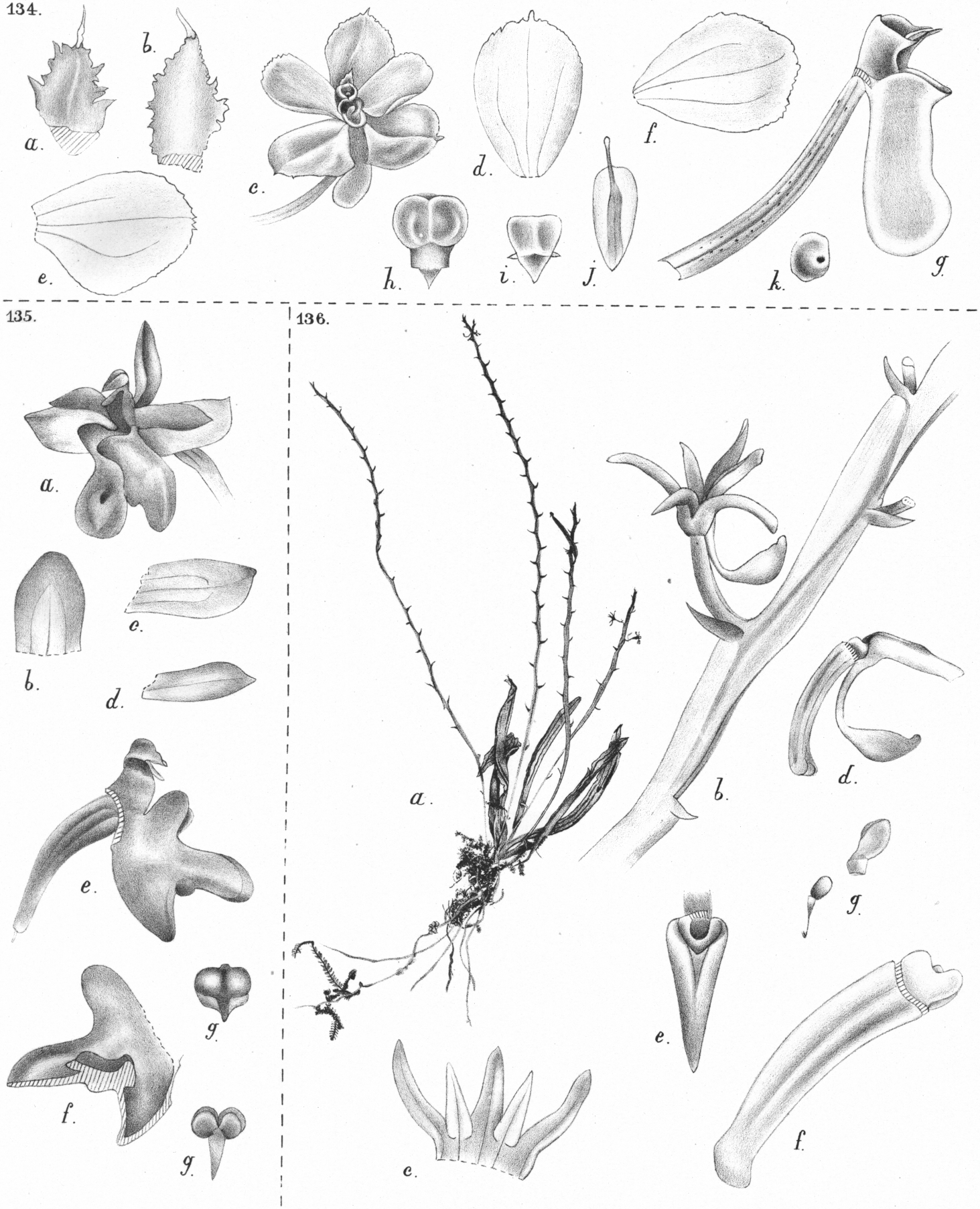
a, *b*. Bracteae.
c. Flos.
d. Sepalum dorsale.
e. Sepalum laterale.
f. Petalum.
g. Labellum et gynostemium.
h. Anthera novella.
i. Idem, adulta.
j. Stipes cum glandula.
k. Pollinium.

LXXXIII, 135. **Sarcanthus decurvicalcar** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labelli sectio longitudinalis.
g. Anthera.
h. Pollinarium.

LXXXIII, 136. **Microtatorchis clavicalcarata** J. J. S.

a. Planta florens.
b. Pars rachidis.
c. Sepala petalaque explanata.
d. Labellum et gynostemium.
e. Labelli lamina supra visa.
f. Gynostemium.
g. Pollinarium.


134.
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135.
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136.
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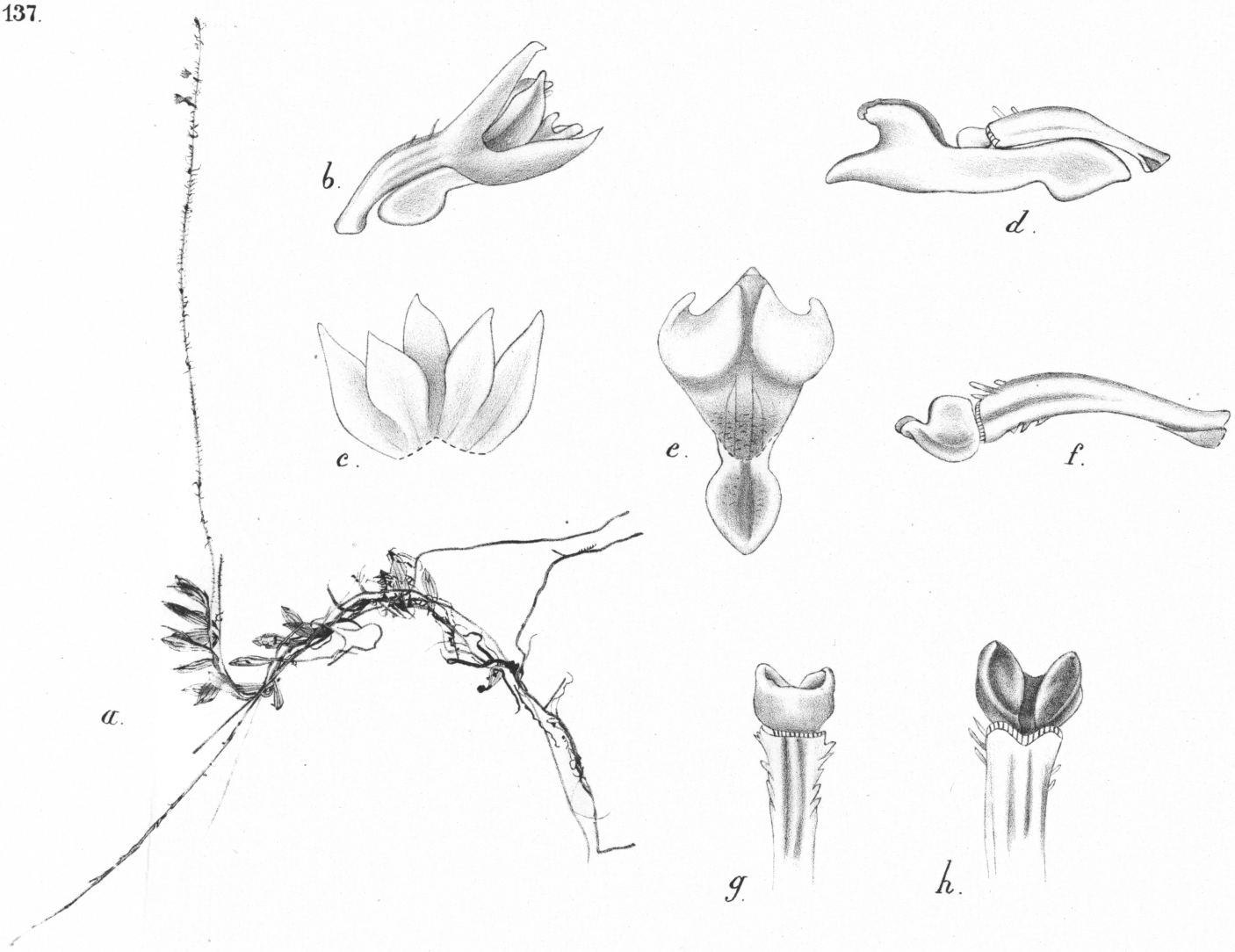
LXXXIV, 137. **Microtatorchis triloba** J. J. S.

a. Planta florens.
b. Flos.
c. Sepala petalaque explanata.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Gynostemium.
g. Idem, supra visum.
h. Idem, subtus visum.

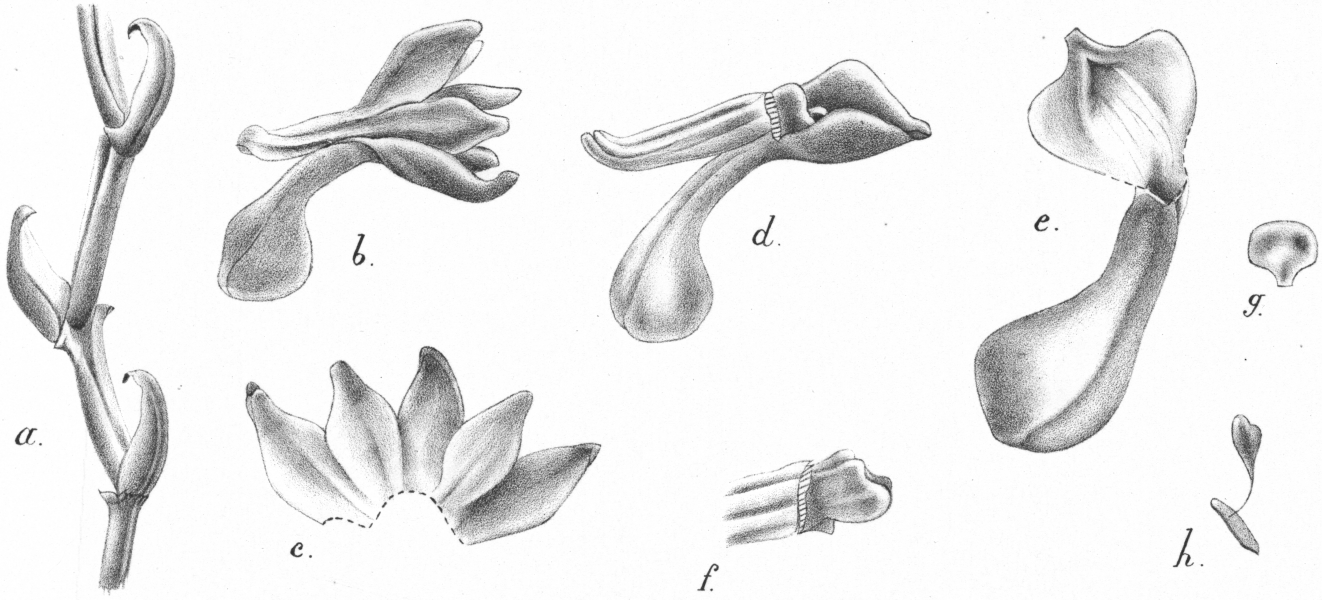
LXXXIV, 138. **Microtatorchis Lamii** J. J. S.

a. Pars inflorescentiae.
b. Flos.
c. Sepala petalaque explanata.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera.
h. Stipes cum glandula.

137.



138.

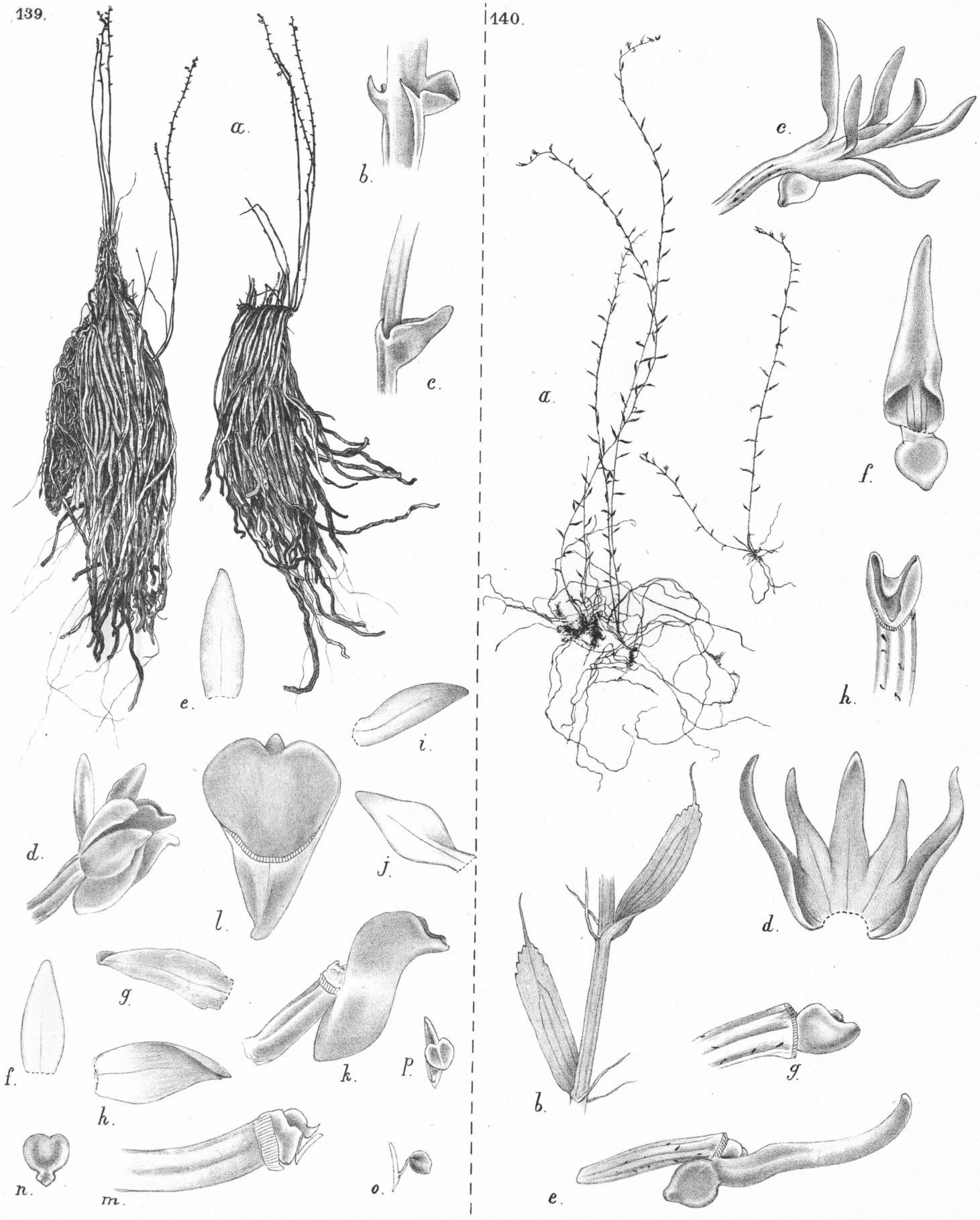


LXXXV, 139. **Microtatorchis terrestris** J. J. S.

a. Plantae florentes.
b, *c*. Bracteae.
d. Flos.
e. Sepalum dorsale.
f. Idem, e flore novello.
g. Sepalum laterale.
h. Idem, e flore novello.
i. Petalum.
j. Idem, e flore novello.
k. Labellum et gynostemium.
l. Labellum explanatum.
m. Gynostemium.
n. Anthera.
o. Stipes cum glandula a latere visum.
p. Idem, supra visum.

LXXXV, 140. **Microtatorchis podochiloides** J. J. S.

a. Plantae florentes.
b. Bracteae.
c. Flos.
d. Sepala petalaque explanata.
e. Labellum et gynostemium.
f. Labellum supra visum.
g. Gynostemium.
h. Idem, subtus visum.


139.
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140.
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LXXXVI, 141. **Taeniophyllum tripulvinatum** J. J. S.

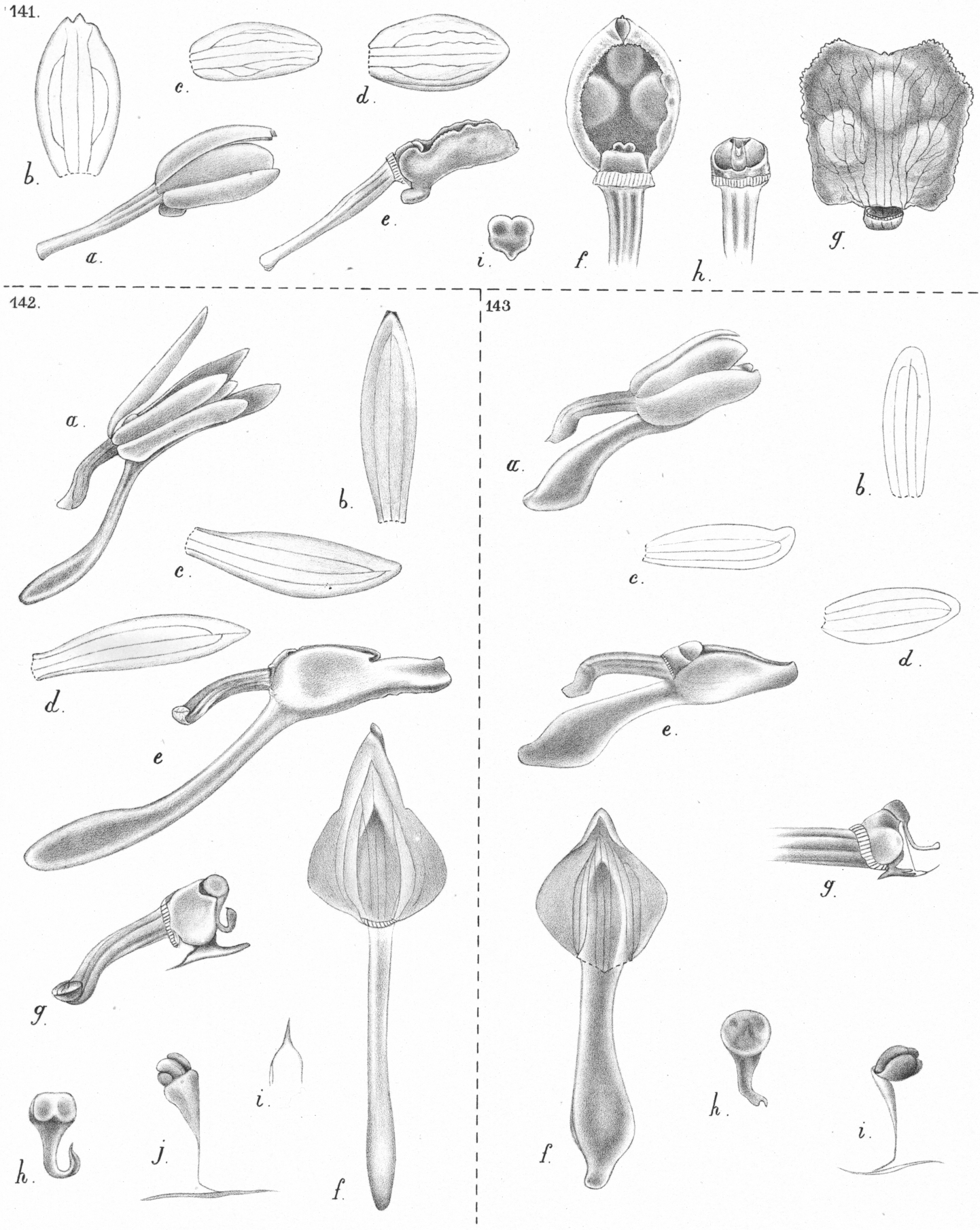
a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Idem, supra visum.
g. Labellum explanatum.
h. Gynostemium subtus visum.
i. Anthera.

LXXXVI, 142. **Taeniophyllum cymboglossum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Antherae rostri apex.
j. Pollinarium.

LXXXVI, 143. **Taeniophyllum recurvirostrum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labellum explanatum.
g. Gynostemium.
h. Anthera.
i. Pollinarium.


141.
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142.
a.
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i.
j.
143
a.
b.
c.
d.
e.
f.
g.
h.
i.

LXXXVII, 144. **Taeniophyllum manubrioliferum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Gynostemium.
g. Anthera.
h. Stipes polliniorum.
i. Pollinium.

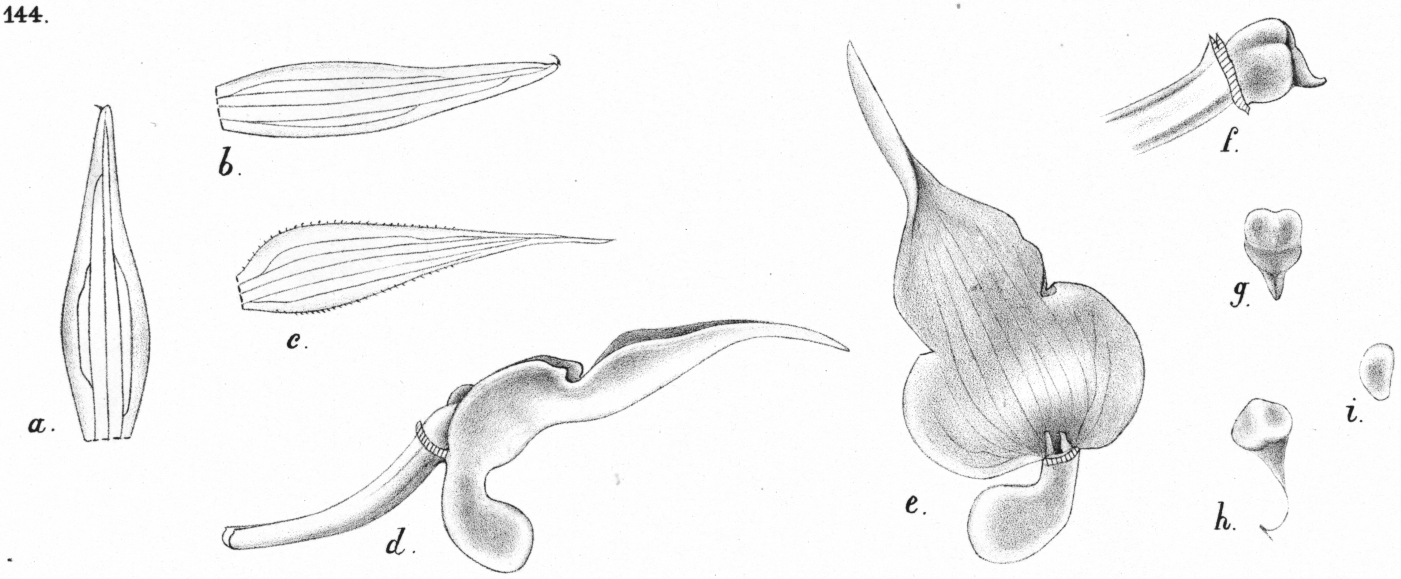
LXXXVII, 145. **Taeniophyllum canaliculatum** J. J. S.

a. Sepalum dorsale.
b. Sepalum laterale.
c. Petalum.
d. Labellum et gynostemium.
e. Labellum explanatum.
f. Gynostemium.
g. Pollinarium.

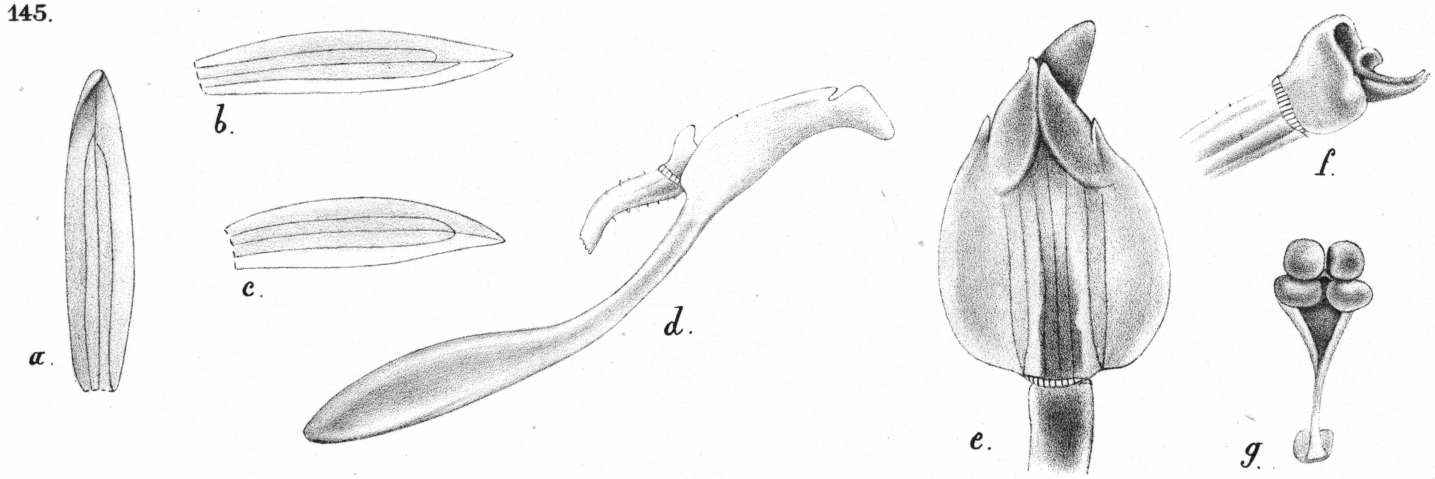
LXXXVII, 146. **Taeniophyllum stipulaceum** J. J. S.

a. Flos.
b. Sepalum dorsale.
c. Sepalum laterale.
d. Petalum.
e. Labellum et gynostemium.
f. Labelli lamina explanata.
g. Gynostemium.
h. Anthera.
i. Pollinarium.

144.



145.



146.

